Forestry
$4.00 a Year
MAY 18 1936
50c a Copy

VETERINARY MEDICINE

JUNE 1936

CONTENTS

Schooling for Doctors 232
More Information Concerning Animal Disease Required 234
Animal Disease a Factor in Soil Conservation Plans... 235
The Dog Food Racket in the Lime-Light Again..... 238
Army Veterinary Service Commended..... 240
Striving for the Spectacular..... 242
Vaccination of Dogs Against Rabies Effective..... 243
Charles Henry Stange..... 244
Vitamin C Antitoxic..... 245
Horse-Dealer Tricks 150 Years Ago..... 245
A Few Things Learned in Practice..... 246
Historical Background of Davenil..... 249
Biological Experimentation Essential..... 251
The Hog Cholera Problem..... 252
Chenopodium Intoxication in Swine..... 253
Resistance to Distemper in the Pregnant Bitch..... 254
Cysticercosis in Deer..... 259
The Rearing and Care of Jacks..... 259
Pus in the Maxillary Sinus..... 260
A Dog and a $3,000 Ring..... 261
The Auburn Home-Mixed Dog Ration..... 262
Abstracts:
Whelping in Foxes, 264; The Microscopic Diagnosis of Strongyloasis, 264; Every Farmer an Animal Doctor, 264; Sanitary Milking and Milk, 265; Tetany Among Calves, 265; Animals Think, 265; Treatment of Articular Wounds, 265; Blackleg an Intoxication, 266; Practical Therapeutic Suggestions, 266; Premunition in Brucellosis, 267; Renal Involvement in Canine Typhus, 268; Wholesomeness of Meat from Tuberculous Animals, 268; New Method for Preserving Milk, 269; Swine Plague not a Distinct Entity, 268.
Topographical Anatomy of the Dog..... 269
The Practice of Veterinary Medicine..... 269
Dog Encyclopedia 269
Abortion Spontaneous and Induced..... 270
Medical Mycology, Fungous Diseases of Mammals.... 271
Veterinary Medicine in Japan..... 273
Report International Veterinary Congress..... 274
Importance of Milk in Rickets Prevention..... 276

VOL. XXXI
No. 6

Entered as second-class matter Nov. 8, 1920, at the post office at Chicago, Ill., under the Act of March 3, 1879.

75 E. Wacker Drive
Chicago, U. S. A.

WARNING!

Hundreds of brands of prepared dog foods are offered to dog owners and veterinarians. The contents and methods of manufacture of only 20 odd brands are officially inspected and passed by the U. S. Department of Agriculture.

RED HEART DOG FOOD is made in a B.A.I. inspected plant, of inspected materials, under the same hygienic conditions as our nationally famous meat products for human consumption.

In the recent, much publicized arraignment of ordinary canned dog foods, dog food made in plants under B.A.I. inspection was excepted from condemnation. Of them it was said, "They make a pure, wholesome product."

Concerning the manufacture of uninspected canned dog food, nearly every newspaper carried this story: "These racketeers use carrion and diseased carcasses. . . . It is tankage. It is sewage."

Be safe. Use an inspected product. Use RED HEART. It contains only beef by-products, beef, vegetable meal, cereals, bone meal, and cod liver oil, with digestive enzymes employed in the making. You can recommend RED HEART with confidence. A product of John Morrell & Co., manufacturers of famous "Morrell Pride" Hams and Bacon for more than a century.

"The flood of worthless and even harmful dog foods on the market is deplorable . . . and the cheap price at which many canned dog foods are sold is evidence in itself of poor quality."—Dr. D. M. Campbell, Editor of Veterinary Medicine

3 DIFFERENT FLAVORS IN 1-LB. and 7-LB. CANS

DIET "A"—Beef Flavored
DIET "B"—Fish Flavored
DIET "C"—Cheese Flavored

RED HEART

The Complete Diet for Dogs

WATCH FOR THE NEW RED HEART BISCUITS AND KIBBLES NOW BEING INTRODUCED.

Veterinary Medicine

Registered in U. S. Patent Office

Vol. 31 **JUNE, 1936** **No. 6**

Published Monthly by the Veterinary Magazine Corporation
75 East Wacker Drive, Chicago, Ill., U. S. A.
$4.00 a Year; per Copy 50 Cents.

Copyrighted 1936, by Veterinary Magazine Corporation.

All matter appearing in this publication is covered by copyright, and no part of it may be reproduced without permission. Permission will be granted on request for reproduction of anything in the columns of VETERINARY MEDICINE if the purpose of the reproduction is unobjectionable. Where there is any doubt as to the propriety of reproduction, the wishes of the author will be consulted.

D. M. Campbell, Editor **A. T. Kinsley, Associate Editor**
H. J. Mostyn, 1265 Broadway, New York, Eastern Representative

Two out of three brands of trypan blue tested in the Onderstepoort laboratories of the Veterinary Service of the Union of South Africa, showed markedly increased toxicity when the solutions stood for ten days before injection. "It is therefore obvious that only freshly prepared solutions of trypan blue should be used."

In examinations made of a thousand dogs and cats in Copenhagen during 1934 for the presence of trichinae, in which 192 preparations of each animal were examined, no case of such parasitism was observed. In four preparations from young dogs, *Ascaris* larvae were found encysted between the muscle fibers and surrounded by round cells.

A new laundry process is said to make sheets, towels and other textiles, hat bands, powder puffs, etc., sterile until they are soiled, when they become actively antiseptic. The germ-killing properties of the textiles continue for at least a year. The process is known as "sanitized" and is the invention of Dr. L. C. Clement of New York. It consists in the treatment of the textiles with a toxic gas which leaves no odor or discoloration.

History isn't static. Human enterprise seldom stands at pause. When progress stops, retrogression sets in. The only way to hold our own is to push on.

Henri Fabre, the great French naturalist, once wrote that "history celebrates the battlefields upon which we meet death, but scorns to speak of the plowed fields whereby we live." It perpetuated the names of kings, but left unhonored those who had given us bread.

J. A. Beach, (*Jour. of Infectious Diseases,* 57:2) in an investigation to determine the period of survival of the virus of infectious laryngotracheitis in the bursa of Fabricius and cloaca of chickens after vaccination, found: "Active laryngotracheitis virus was not detected in the bursa of Fabricius of young chickens later than the seventh day following injection of virulent virus into the bursa. This time interval corresponded to that during which the visible inflammatory reaction of the cloacal mucous membrane to the virus was present in the chickens. These results, together with those of others to which reference is made, suggest that in about one week after vaccination against laryngotracheitis chickens cease to be virus carriers."

The American Kennel Club was organized in Philadelphia in 1884. The first dog registered was an English setter. The first stud book (1884) listed 807 dogs. Its average registration since 1925 has approximated 46,000 annually. Its membership consists of dog clubs (not individuals) which in 1935, numbered 175.

PASTEURIZATION NEEDED

Three milk-borne epidemics of typhoid fever, in which there were 12, 16 and 20 cases, occurred in Illinois during 1935. In each outbreak, the source of the infection was raw milk from a single small dairy, where there was a case of typhoid in the family of the dairyman, not recognized until the infection was spread to the extent shown by the cases recorded.

RODENT PLAGUE IN CALIFORNIA

Kellogg in discussing (*Jour. of A. M. A.*, 105:11) the recent outbreak of enzootic plague, considers it significant that after a considerable period of quiescence, the disease is actively spreading among the wild rodents of rural areas in widely separated districts, in areas far from any formerly known infection. "The prevalence of infected squirrels near the borders of Oregon and of Nevada and on the other side of the mountain range suggests that there is no natural limitation to the spread of plague through wild rodents to places far distant from its original entry into this country in the Bay district of California. Plague is evidently a permanent problem on the Pacific Coast, and the prospect of its becoma problem in other states appears at the present time to be good. Especially to be feared so far as man is concerned is the pneumonic form of the disease, which, as I have already indicated may be directly related to plague in animals of the squirrel and ground hog type." It is pointed out in an appended note that since the writing of this article rodent plague has been officially reported from Montana and three counties of Oregon.

Diseases cause greater loss in poultry than in any other kind of domestic animals.—*S. N. L.* 29:783.

BENJAMIN SCHWARTZ, A.M., Ph.D.
New Chief of the Zoological Division, Bureau of Animal Industry, United States Department of Agriculture.

SCHOOLING FOR DOCTORS

In 1906 the American Medical Association was so disturbed by the condition of U. S. medical schools and by the laxity of state licensing requirements that it founded a Council on Medical Education & Hospitals, installed the late Dr. Nathan Porter Colwell as secretary. That year Dr. Colwell went to the Carnegie Foundation, asked that a lay survey of the nation's medical schools be made and its findings published. The Carnegie Foundation chose for the job a brilliant young educator named Abraham Flexner, who had ceased teaching in Louisville high schools to earn a Harvard M. A. With Dr. Colwell, Abraham Flexner visited U. S. medical schools, U. S. clinics, studied the bylaws of the state medical boards which licensed new practitioners. His findings he presented incisively in *Medical Education in the United States & Canada,* which was published in 1910, had a wide sale and an even wider influence, shocked the U. S. public into a realization that the education of medical students was a matter of public concern.

Goat's milk is far more widely used than most people think, says a farm scientist, for there are over 5,000,000 milk goats in the United States alone.—*S. N. L.* 29:779.

* * * *

Leo McCarey contracted undulant fever from drinking milk while directing the production of "The Milky Way." In retaliation, he is writing a book, "Reaching for Death," describing his hallucinations while sick.

* * * *

The Medical Society of the County of Kings (New York) was organized 114 years ago. It has 2,400 members, a library of 137,000 volumes and receives 1524 periodicals all of which are filed for reference. Only three medical libraries in the country exceed it in size. The organization has a superintendent, a librarain and 12 other whole-time employes, a number of them assigned to the more important committees, such as public health, press reference, radio, etc. The latter committee broadcasts 15 minutes weekly throughout the year. The society has an endowment of $45,000 and its annual income approximates $75,000. Its membership includes 60 per cent of the 4,034 physicians practicing in the county.

* * * *

Smallpox is of two distinct types, mild and malignant. The mild type is endemic over pretty much the whole of the United States. The case mortality is less than 0.5%. The reservoir of infection is in rural sections where vaccination is not systematically carried out. The case mortality of the malignant type approaches 25%, or is about 50 times as high as for the mild type. In the last two decades outbreaks of the malignant type of smallpox have occurred in the United States only when imported from Mexico or from Asia, where it is prevalent. In each instance public health authorities have stamped it out although in one instance (imported from Japan through Winnipeg in 1924) 7,400 cases and 1270 deaths occurred. Vaccination is an effective preventive of both types.

In 1900, when the Bureau of the Census began the recording of vital statistics, the death rate in the registration area of the United States was 17.6 per thousand of population; in 1934, it was 11.1, a saving of one life in every three. In 1934, the deaths in the registration area, about 96% of the total population, numbered 1,396,905. Had the rate of 1900 prevailed the number would have been greater by three-quarters of a million, a number exceeding the populations of Buffalo and Albany combined.—*Med. Times.*

* * * *

Biological preparations distributed by the Illinois Department of Public Health during 1935 were sufficient to treat 2,248 persons for the prevention of rabies; 81,428 for the prevention of typhoid and 167,180 for the prevention of smallpox. This is an increase of more than 54% over 1934 in the number of Pasteur treatments distributed. The increase was due to the greater prevalence of rabies in the state. The increased use of typhoid vaccine (30%) resulted largely from campaigns promoted by the State Department of Public Health in the typhoid endemic centers of the State. To this more than any other one factor is attributed a 30% decline in the typhoid fever prevalence last year.

* * * *

The mortality due to tuberculosis has probably exceeded that of any other human scourge, even that of the great pandemic plagues. Until within a few years it was the foremost among death-dealing diseases; in 1934 it was fifth in the list. The segregation of patients, compulsory in many communities; rigid inspection and the pasteurization of milk; the gradual elimination of infected milk herds; better all-around sanitary conditions—all these, to a certain extent, have been preventives. In 1900 the death rate from tuberculosis was 195.0 for each one hundred thousand of population; in 1934 it was 56.6—result of education and not physic. Credit the doctor as an educator. But the toll, even lessened two-thirds in thirty-five years, is frightful—71,000 lives.—*Med. Times.*

MORE INFORMATION CONCERNING ANIMAL DISEASE REQUIRED

A fundamental failure of our veterinary service is recorded in the fact that we have not, up until this day, taken any pains to accumulate animal morbidity and mortality statistics. As a result of this, except as to tuberculosis and, in very recent months, Bang's disease, we have but the sketchiest information concerning any of the present diseases of live stock, of the amount or even the proportionate loss from any of them. We know certainly that the toll of disease of domestic animals in this country is enormous; but any figures, official or otherwise, are but guesses, with very little basis upon which to guess. We guess that Bang's disease may cost us 50 million dollars annually and mastitis twice as much. We feel certain that the cost of hog cholera on the average is not less than 25 millions of dollars a year, and that the cost of the other infectious diseases of swine may be approximately the same. And, we think that parasites of animals may take a greater toll of wealth from the live stock industry than all bacterial and virus diseases combined. Some authoritative veterinary vital statistics, showing the extension and recession of epizootics, the periodic waves of infection if such occur, the seasonal prevalence of various diseases, the location of enzootics, etc., would be exceedingly useful in formulating and carrying out disease control measures.

The indispensability of vital statistics to any intelligent planning for the control of disease is so unquestioned by the medical profession that it is cited to support a demand for statistics in other fields as the following from the *Illinois Health Messenger* shows:

A new Illinois law requires a report to the State Division of Highways of every motor vehicle accident which results in personal injury or death. The enforcement of this law will involve considerable government expense and an aggregate of no little effort. Is it worth the cost and trouble?

Probably the best answer is found in an examination of results which have followed the reporting of communicable diseases. Not so long ago the hazards of typhoid fever and diphtheria were twice as great as the hazards of motor vehicle accidents today. These two diseases not infrequently accounted for 4,000 deaths and 50,000 cases of illness within a year. Now they are responsible for only about 360 deaths and 3,000 cases of illness annually. The improvement resulted from a discovery of the causes of these diseases coupled with the application of preventive measures at the points where they were likely to occur. *Reporting of cases made possible the development of practicable programs of control.*

The same principles apply to motor accident hazards. Not only speed but such factors as the character of the highway, condition of motor, characteristics and condition of driver, weather and time play a part in the cause of accidents. The relative importance of these different factors is not well known. Reports on all accidents would make possible an accurate appraisal of the causative factors so that safety campaigns may be developed in a way that will lead to a concentration of effort on the factors of greatest importance.

Those concerned with animal disease control measures cannot be taken very seriously until they show some interest in ascertaining the location of the disease, the amount, how it got there and where it is going and why.

* * * *

REMOTE EFFECTS OF VITAMIN DEFICIENCY

Vitamin deficiencies in youth may cause trouble in later years. Many of the nervous conditions that we observe in later life seem due to a deficiency of vitamin B. Even in old age, there are many conditions which are improved by the administration of vitamin B extracts, such as anorexia, constipation, and, in rare instances, certain spinal symptoms which are suggestive of cord degeneration.

Professor Hart and Drs. Kline and Elbehjen, of the University of Wisconsin, have called vitamin B the brain vitamin. When the diet is lacking in this, deterioration of the cerebellum, especially in the motor areas, and general paralysis result. In some cases, vitamin B seems to help weakness in the spinal nerves in old age.

The use of vitamin B extract for the prevention of nervous disorders is interesting. In beriberi, we see the effect of vitamin B deficiency on the myocardium and it is a factor in the production of edema.—*Med. Times*, 64:3.

Animal Disease a Factor in Soil Conservation Plans

AFTER lying dormant a year, the new soil conservation act of the Congress is being feverishly activated by the U. S. Department of Agriculture—the motivating stimulant being benefit grants provided by a recent amendment to the original law.

Under the plan of administration, crops are divided into three general classes: (1) soil depleting—corn, cotton, tobacco, sugar cane, beets, commercial truck, and small grains; (2) soil conserving—biennial and perennial legumes, perennial grasses grown on arable land, small grains as nurse crops (not harvested) and plowed under; and (3) soil building crops—legumes, grasses and small grains plowed under and perennial legumes. Benefit payments will be made up to an average of $10.00 per acre on not more than 15% of the base acreage for discontinuance of soil depleting crops and the planting of soil conserving or soil building crops. An amendment providing no benefit payments were to be made on land the crops from which were sold or fed was rejected when the act was before Congress but probably it is within the discretion of the Secretary of Agriculture to graduate the payments according to the use made of the crops.

Obviously the soil conservation crops lend themselves to live stock farming, and an increase of this type of farming is to be expected from the large grants available to those who discontinue soil depleting crops and use the acres thus released for soil conserving crops.

AGRICULTURE is confronted with the problem of marketing this prospective increase in animal production. A recent government survey has shown that not much can be expected from increased export; therefore, a domestic market must be found or developed. The dairy industry has already protested vigorously against the soil conservation plan as being essentially a subsidizing of competition, which in effect, it is. The beef industry, the sheep industry and even the hog and poultry industries may be expected to look upon it in somewhat the same light.

A means of balancing the production of animals and the consumption of animal products, that is of increasing the consumption to take care of the inevitable increased production, seems indispensable to any continued success of the plan.

THE way to a largely increased consumption of dairy products, through improvement in the quality of these products and a greater confidence of the public in their wholesomeness, has already been pointed out in these pages (VETERINARY MEDICINE, September 1935, p. 379; March 1936, p. 98 and May 1936, p. 188). An increase in the consumption of beef, mutton and pork at prices profitable to the consumer is by no means so simple as is increasing the consumption of dairy products; although an adequate inspection of that 40% of the meat and meat products now slaughtered and processed without inspection, would eliminate thousands of carcasses of diseased animals from market channels and help some. Greater confidence in a more wholesome product would also increase somewhat the consumption of meat and meat products and help still more. There is also the canned dog food market which now absorbs 150 million pounds of carrion and garbage annually, to the exclusion of a similar quantity of products of the range, farm and feed lot. Placing all canned dog food manufacture under the same inspection as that portion manufactured by the large packers would capture this market and at the same time increase the fertilizer supply.

HOWEVER, J. C. Holbert of the Iowa State College (*Breeder's Gazette*, April, 1936) points to a way for using profitably the increased production of legumes and grass without an increase in the number of meat animals. The objective of the soil conservation plan is to take some 30 million acres out of the production of soil depleting crops and put them into soil conserving and soil building crops. Professor Holbert reminds us that in 16 years, 40 million acres formerly used to produce feed for horses have been released for the production of food for other animals and for man by a decrease in the number of horses by 10 millions within that period. Quoting from Professor Holbert:

Don't you think it would be logical for the government to promote the idea of putting back upon American farms the most useful power that the farm has ever had—horses?

I do not believe it is possible or practical to try to increase the number of horses by 10 millions, but it is important to check the decrease in horse population and increase it, say, three to five millions in the next five years. If we could do this, it would aid permanently in helping to correct over production and partly answer this question of what are we going to do with this land after we put it back to grass.

I think a logical horse program could be attacked from three fronts, a strong education program of how to use horses more economically, a stallion subsidy plan and a loan plan.

Henry Wallace, in his book, "The New Frontier," speaks of leadership and statesmanship of farm leaders. There are a bunch of us in Iowa who believe a horse program is sound and logical, not because of sentimental reasons but because of sound, hard facts.

There are many things that the Secretary of Agriculture might legitimately do, and should do, to stay the reduction in the number of horses employed in agriculture, and perhaps to bring about some increase in the number of horses so used. Professor Holbert has mentioned three of them. His first suggestion is the more important and opens a fertile field for research. Almost any state agricultural experiment station can supply applicants one to a half-dozen bulletins on the operation, cost and maintenance of farm tractors; but precious few of them can supply up-to-date information on the same questions as to the use of horse power on the farm. Some questions having to do with the use, feeding and care, which arise at once, are:

Are the multiple hitches so ably promoted of recent years by the Horse and Mule Association of America capable of further development, and can they be simplified by a change in harness or otherwise? Simplification is urgently needed.

Is it feasible to give work horses their night and morning feeds, as fattening steers are fed, in a corral? Such a plan would save a great deal of labor in feeding, cleaning out barns and grooming. Can horses hard at work be given grain and hay *ad libitum* if they are brought to the point gradually as fattening steers are brought to full feed? It needs investigating.

In view of the prospective lessened grain and increased forage production, can horses be worked efficiently without grain? When our army was in Puerto Rico an army veterinarian developed a ration for the military animals on which they worked better, without grain than on the usual army ration of hay and oats. The findings have lain unused, uninvestigated, practically unknown for nearly 40 years.

In the Philippines our army veterinarians found a vast amount of incapacity in horses was due to a ration that resulted in extensive skeletal pathology —spavin, side bones, navicular diseases, sprains, strains and uncounted lamenesses. Farm horses suffer from the same disabilities. Are they due also to nutritional faults? The answer is worth knowing.

The ponderous, leather harness commonly used by farmers is exceedingly expensive, wears out rapidly and is laborious to put on and take off. It is uncomfortable for the horse in hot weather, and thus lessens efficiency. The military establishment dispensed with such harness years ago. Its use on farms is a matter of tradition. It belongs with the high hat and frock coat of the coachman of by-gone days. A better type can no doubt be developed.

If work horses must be stalled at night, better grooming appliances should be developed. The old, hand plan that has undergone no change in a thousand years is laborious and time consuming. Power appliances for grooming now available, are practical only for a large number of horses. Some in-between-method is needed for the farmer that must groom from two to 20 horses.

Horse power on farms was not supplanted by mechanical power primarily for reasons of money, but to get away from the chores inescapable from the use of horses; to avoid having to get up before daylight in the morning, and to give an opportunity to go to a picture show in the evening. The

inconveniences and labor incidental to the use of horse power on the farm must be given as much, even more, attention than is given to the use of it in the field.

The foregoing by no means exhausts the list of problems upon which research is desirable. It is but suggestive of how little has been done. It leaves untouched the whole field of horse breeding and the rearing of horses. Can horses be bred for both pulling power and endurance as successfully as they have been bred for conformation, style and speed? We need more information concerning the faults of nutrition during colthood that may lower the capacity for work throughout the animal's life. This is illustrated by two three-year-old geldings offered for sale. They had a history of having been fed on wheat straw and fodder, without grain, during their first two winters and of having been at pasture during the summers. It was stated that they had always been thin in flesh and had made little growth either winter, but during the summer seasons had grown so rapidly that they were of normal size. The third winter they were given plentiful rations of grain and good hay, and were in sale condition when shown. An examination revealed that both had suffered from rickets and it was the opinion of two veterinarians who examined them, that neither animal would ever be of any value for work. The stifle joints in particular, were deemed to be damaged beyond repair, although there was outward evidence of this only upon close scrutiny. They were sold later at public sale for $148 each. If the diagnosis and prognosis were correct, the purchaser, of course, is doomed to disappointment and likely to become a good prospect for a tractor salesman. Many different owners may in turn regret the purchase of these fine appearing animals.

BUT more important in its deterrent effect on the use of horses than all of the foregoing combined, has been the handicap of uncontrolled disease. Only veterinarians who were practicing when the horse was the sole power used on the farm and for hauling in the cities, realize the cost of uncontrolled, and largely unnecessary, disease in money, in loss of time and in disappointment. A professor of animal husbandry, at one of the state colleges, speaking before a veterinary convention recently, said:

> Our state imported 12,000 horses during the past season, and as a result of that, we lost 3,000 animals from influenza and other diseases incident to shipping. About 75% of this loss occurred among the newly-purchased animals and about 25% from disease communicated to animals already on the farm. Gentlemen, this loss is too great. Our farmers cannot stand it and if it is not lessened they must turn even more to tractors and depend upon them for an even greater portion of their farm power.

That group of respiratory diseases loosely grouped as shipping diseases are not normally of serious consequence in the normal animal. They depend for their pathogenicity upon a marked lowering of the natural intrinsic resistance of animals to the invasions of microorganisms, or to a suddenly and temporarily stepped up virulence of the organisms. Our faulty method of collecting and shipping animals in community sales and at general markets is responsible for enormous loss occasioned by this type of infection. The veterinarian is given no opportunity to combat these diseases when his services could be of the most value. He is called in after the animal has been through perhaps two or three community sales and finally through a general market; after it has been through one to several public stock yards and trucked or shipped by rail or both, for a period of perhaps ten days or even longer; subjected to exposure, exhaustion, irregular feeding and watering and unaccustomed handling.

No plans for rehorsing American farms, and probably not much effort directed to maintaining the number of horses on the farms at the present level, will be, or can be, successful unless the matter of disease control, not only for diseases incident to shipping but for others also, is given far more intelligent consideration than it has had heretofore.

Disease control offers an outstanding opportunity to reduce the cost of horsepower.

The Dog Food Racket in

Congress is reported to be considering, in committee, the nefariousness of the canned dog food racket and considering measures for curbing it. It furnishes sufficient evidence of abuses to attract the attention of the Congress, even in a campaign year. It is highly desirable that something constructive come of the consideration.

This magazine, and this magazine alone, has exposed objectionable features in the canned dog food industry repeatedly for the past four years. Although the articles published were intended solely for veterinarians, their popular appeal was such that, altogether, more than half a million reprints have been distributed. These articles were in considerable part responsible for the failure of the Dog Food Manufacturers' Association to obtain the recognition of the NRA for its program. The publicity this magazine gave the objectionable methods of the majority of the manufacturers of canned dog food was in part responsible for the failure of the Association, after an elaborate administrative personnel, costing more than $50,000 a year, had been provided. Manufacturers of inadequate and unfit canned dog food have privately acknowledged to the writer that the attitude of the veterinary profession towards their foods made conditions harder for them. This is gratifying.

It is not necessary to repeat, even in abstract, what has already been published in detail, but it seems worth while to restate that canned dog food is of two types: (1) That manufactured in inspected plants, that is, in abattoirs whose products are inspected by veterinarians of the Federal Bureau of Animal Industry; and (2) that manufactured without any sort of inspection or official control.[1]

Not all of the canned dog foods made in B. A. I. inspected plants are adequate; in fact the majority of them are of rather low nutritional value, but they are clean and so far as their nutrition goes, wholesome. They are fit for a dog owner to take into his home, to feed in his kitchen, to store in his icebox and fit for a dog to eat although inadequate for his continued maintenance. About 30 brands of canned dog food are made in some 17 inspected plants. Perhaps a third of them are really adequate foods; others approach this goal in varying degrees.

It should be noted that the only inspection legend on the label that means anything, is: "U. S. Inspected and Passed by the Department of Agriculture."

The other, the uninspected group of canned dog foods, is quite a different matter. It includes some 200 brands which, in the main, are abominations. Perhaps no one person knows the details concerning the manufacture of all of them. Certainly a large majority of them are of low nutritional value, a product of filth and putrefaction, and unworthy of the confidence of the veterinarian or the dog owner and unfit for the dog. In most instances they are a byproduct of rendering works and scavengers, a larceny on the tankage and fertilizer supply. Not only are they made from the carcasses of animals dead from accident and disease but usually from the putrefied flesh of such animals, or from meat scraps and garbage in like condition.

The labeling of many of them is a study in deception. In the past, many of these labels have contained the statement: "Contains U. S. Inspected and Passed Lean Beef," or statements of similar purport. Some of them still contain such legends, but they are not so common as formerly. How deceptive such a label may be, even where it is literally true, is shown by the following experience.

The writer, on a hot summer day, standing beside tons of putrefying garbage collected from the meat markets of a half dozen small cities and viewing the mass, the whole surface of which was crawling

[1] A fish product canned for dog food under state inspection is not considered in this discussion.

the Lime-Light Again

with maggots, asked the manufacturer how he could say that his dog food "Contained U. S. Inspected and Passed Lean Beef." His reply was that the butchers from which he gathered the scraps, bones, chicken heads, chicken entrails and everything else that went into the garbage barrel, sold inspected and passed meat and therefore, at least some of the scraps in his dog food had been inspected and passed by the U. S. Department of Agriculture. His labels also contained the statement, "fit for human food." The use of this latter statement, however, has been largely discontinued not only on uninspected but on inspected foods as well. It never should have been used.

Claims of a "biologically tested product," and "adequate ration," and a "perfectly balanced food," etc., quite generally made for even the most inadequate foods were revealed, upon investigation, to have originated in the fertile imagination of the advertiser, without any sort of test, scientific or otherwise, nor upon any better evidence than testimonials and often without even that dubious evidence of quality.

A recent ruling of the solicitor of the Federal Bureau of Animal Industry, that the meat inspection law of 1906 gives the Bureau no control over uninspected dog food, removes what small restraint the Bureau has been able to exercise in this field heretofore, a restraint that extended only to requiring that canned dog food shipped interstate be "decharacterized" by the addition of charcoal or some other substance, the amount not stated. It is highly desirable that some governmental agency be given authority to prevent false, fraudulent and deceptive labeling of canned dog foods, at least as to the ingredients in them, even if the veterinarian or the dog owner must still, perforce, rely upon his own information as to the quality, wholesomeness and nutritive value.

The long record of the Bureau of Animal Industry for efficiency and honesty, in control of the slaughter and processing of meat for human food, recommends it as an agency to which the Congress may delegate, with entire confidence, such measures for control of the canned dog food industry as it sees fit.

Since the foregoing was put in type, Senator Dickinson of Iowa has made his much publicized "dog food speech" on the floor of the United States Senate (Congressional Record, April 27, 1936). Senator Dickinson designated the manufacturers making inspected canned dog food as follows:

Armour & Co., Chicago; Chappel Bros., Rockford, Ill.; Foell Packing Company, Chicago; George A. Hormel & Co., Austin, Minn.; Illinois Meat Company, Chicago; Loyal Packing Company, Chicago; Modern Food Products Company, Philadelphia; John Morrell & Co., Ottumwa, Ia.; Rath Packing Company, Waterloo, Ia.; Rich Products Corporation, Rockford, Ill.; Republic Food Products, Chicago; Rival Packing Company, Chicago; Schlesser Bros., Portland, Ore.; Swift & Co., Chicago; Wilson & Co., Chicago.

He stated their products are "clean and wholesome."

Unfortunately, but probably inevitably, Senator Dickinson gave his speech a strong political slant, generally arraigning officials of the U. S. Department of Agriculture for permitting "sewage labeled as fit for human food" to enter into interstate commerce. However, he excepted Doctor Mohler from this general arraignment and paid him a high tribute.

The Senator urged that the meat inspection law be extended to include all canned dog food entering into interstate commerce, and clear up a situation worse than that described in Sinclair's "Jungle".

The Senator's interest in the matter was not the welfare of dogs, but grew out of the testimony at the Dog Food Code hearing in February, 1935 (VETERINARY MEDICINE, Feb., 1935, pp. 54-6 and May, 1935, pp. 188-91), that a hundred million cans of dog food are consumed annually by the public, because of misleading statements on

the labels, to-wit: "Contains U. S. Inspected and Passed Meat" and "Fit for Human Food." Our opinion is that this phase of the matter has been exaggerated and that canned food is not used for human consumption to this extent. However, after the cans are opened, it is commonly kept in the family refrigerator with the family's food supply and is eaten by mistake occasionally. Further, it is, of course, known that it is intentionally eaten to some extent. Either circumstance makes the use of carrion in its manufacture simply unthinkable.

The following telegram from the editor of this magazine, sent in response to a request for an opinion, was read into the record by Senator Dickinson:

I am intimately acquainted with the canned dog food industry and have known it for years. At present it is in a deplorable condition due to unconscionable practices of racketeers who infest it in large numbers. Its products are to a large extent filthy, unwholesome, innutritious, unfit for a dog to eat or for its owner to take into his home. Sales are made through fraud and deception in labeling and advertising. I and most other veterinarians maintain that unwholesome canned dog food is responsible for a vast amount of illness and mortality among dogs and cheats dog owners out of millions of dollars annually. The protection of honest dog food manufacturers no less than of the public demands official regulation of this industry. Such regulation has already been delayed much too long. The industry as a result of abuses is in a chaotic state. It is unprofitable to those engaged in it and a calamity to the dog owning public. Proper regulation will benefit every worthy manufacturer, give the public something of value for its money and eliminate incalculable cruelty to man's best friend, the dog.

The day following the speech by Senator Dickinson, Senator Burke of Nebraska introduced a bill to place the manufacture of all canned dog food entering into interstate commerce under the control of the U. S. Department of Agriculture; in effect, to provide for inspection of canned dog food and the premises where it is prepared by the Bureau of Animal Industry as is now done for meat and meat products for human consumption. Although adjournment of the Congress is near, it is expected by its sponsors that this bill will reach a vote and be passed practically without opposition during the present session.

ARMY VETERINARY SERVICE COMMENDED IN PUBLIC DOCUMENT NO. 355

In its report to the House of Representatives for 1935, the Gorgas Memorial Laboratory, created by an act of the Congress in 1928, refers to the veterinary service of the army a number of times in a spirit indicating the approved status that service has won in the few years a Veterinary Corps has been in operation. From the unsatisfactory position in vogue before the World War, veterinary medicine in the military circle has climbed to heights beyond the dreams of pre-war days. With commissions from first lieutenant to colonel and the prospect of a brigadier general heading the corps in the not distant future, competitive examinations of the higher order, comprehensive regulations and capable officers honored and appreciated for their qualifications, the corps has made extraordinary progress.

As a people we feign to shun military matters in curious ways, and little realize that progress in the military branch is the best known stimulus to the slumbering civilian engaged in any branch of science utilized in military education. Imagine civilian enterprises trailing behind the progress made in our little army! When the civil veterinary service of the states labors in scientific projects with other scientific workers as do officers of the Veterinary Corps engaged in tropical disease investigations, with the famous personnel of Gorgas Memorial Institute, veterinary medicine will have attained an objective it has long sought.

How refreshing it is to read a scientific document in which the word "veterinarian" is not somehow deleted. It is beginning to seem probable that the caduceus with the superimposed V will be the ladder of the veterinary profession in this peace-loving country and do for veterinary medicine what Walter Reed did for human medicine.

A brief summary of veterinary activities described in the Gorgas Memorial Institute report will be found on the following page.

VETERINARY RESEARCH IN PANAMA

The eighth annual report (HR 355) of the Gorgas Memorial Laboratory, Panama City, records a considerable amount of research conducted by army veterinarians stationed in the Canal Zone, including an investigation of *Strongylus vulgaris,* and equine trypanosomiasis.

In the study of a series of colts from the day of birth till they were six months of age, it was observed that four out of seven ranging in age from one to seven days, had a thrombo-arteritis almost occluding the lumen of the vessel and in one instance showing several small larvae, indicating prenatal infection. These findings indicate how complicated is the problem of measures designed controlling the spread of the parasite.

The investigations into equine trypanosomiasis have demonstrated that cattle are the most important unharmed carriers of murrina and that they form the reservoir of this disease. They may carry the parasites for months or even for more than a year. It has also been established that the vampire bat is an important vector of the disease. In laboratory experiments one out of every three bats, when fed on cattle carriers of the disease, contracted it and was able to pass it along to laboratory animals and horses.

Methods of treating the disease previously in use have been modified through experimentation at the laboratory and are now found to be successful in a large percentage of cases if put into use before the disease has reached the late stages. Heretofore, the disease was usually fatal. The use of tartar emetic was effective in clearing the parasites from the blood stream but the animal under treatment always died within a few months. The use of Bayer 205 in conjunction with the tartar emetic has given satisfactory results, the former drug apparently guarding the latter.

There also has been developed a better survey method for detecting cattle carriers of the disease. Major Randall, V. C., of the Army Medical Research Board of Ancon developed a complement fixation test that rules out reactions to the harmless trypanosomes and *T. cruzi* and this simplifies the making of rapid surveys such as are needed in a port city to determine the presence of the disease in animals being shipped in. It also makes it possible to pick up carriers on ranges when surveys are possible.

Knowledge obtained through the study of this important equine disease has made possible its eradication from the Canal Zone and neighboring parts of the Republic of Panama, but it is still present in the more remote provinces where animals range at large on unfenced properties.

Lt. Col. H. S. Eakins, V. C., joined the laboratory in October, 1931, and remained four years. He was in charge of the Miraflores Veterinary Station during that period, but his chief problem was a survey of the Canal Zone, Army and Republic of Panama equine stock for trypanosomiasis and the direction of treatment of animals found positive for the disease. As a result of his work, this disease cannot be found at present in the Canal Zone and neighboring parts of the Republic. The index was also greatly reduced in the provinces of Cocle, Herrera and Los Santos where the disease is enzootic in the vast unfenced ranges of that region. He acted as a consultant on various problems connected with the raising of domestic animals and pursued studies on osteomalacia. The Gorgas Memorial Laboratory and the Republic of Panama have derived great benefit from his tour of duty there.

SOIL CONSERVATION IN 1813

In 1813, Thos. Jefferson wrote:—"My farm is hilly and we have been in the habit of plowing in straight rows, whether up or down hill, or however they lead and our soil was all running into the rivers. We now plow horizontally following the curvature of the hills and hollows, however crooked the lines may be."

In 1936, the soil is still "running into the rivers," but folks are too busy with business and bankruptcy to be concerned about such a trifle as soil erosion.

Striving for the Spectacular

SOME writers attain the heights of genius in painting word pictures, portraying the sublime, stirring the emotions, commemorating the heroic, describing catastrophes, and such like; others develop positive genius in annoying. The latter usually find a ready market for their products in political controversies, for what is annoying to one faction is likely to please another. Among the writer annoyers, Paul de Kruif easily holds first place in the opinion of veterinarians. Ostensibly, he is consumed with a desire to interpret certain phases of medical science to lay readers; however, he disclaims any such motive, stating his purpose to be simply to write articles that will sell.

Like most popular writers on medical science, de Kruif sometimes gets his facts tangled and occasionally draws rather ludicrous conclusions, but that is to be expected. It is a common frailty of the untrained in dealing with scientific matters. That, in his writing, which provokes veterinarians most is an ever-present, studied attempt to belittle the contributions of veterinary science to the problems he discusses and a distasteful habit of referring to veterinarians, however well trained, in a scornful and opprobrious manner. That he has insulted the medical profession as frequently does not lessen the offense.

IN DISCUSSING the discovery of the rôle of the cattle tick in the transmission of Texas fever (*Country Gentleman,* 1926) de Kruif described the scholarly scientist, then Chief of the Bureau of Animal Industry, as "a good man named Salmon," who "knew nothing of how to find the microbes." Referring to Salmon, Curtice, Stiles, Hassall and Gamgee, he spoke of "baffled horse doctors" who "lacked horse sense." Kilborne, to whom is due in greater measure than to anyone else, the credit for the discovery, de Kruif dismisses as "something of a horse doctor" and gives the credit wholly to Theobald Smith, Kilborne's associate in the classical experiment.

IT was in a later article (Midget Microbes, *Country Gentleman,* 1934) however, that de Kruif caught his stride as he strewed slurring remarks concerning veterinarians all over four magazine pages. In discussing the canine distemper research at Mill Hill, which, in de Kruif's opinion, all but solved the problem of the control of human influenza, he said:

"Being ignorant at this time of the patient shrewdness of Horse Doctor Dunkin and the insight of Microbe Hunter Laidlaw, I laughed off this argument. Wasn't it a scheme to get money out of soft-hearted dog lovers for the self entertainment of scientists."

And again, it is the "distemper fight of Horse Doctor Dunkin and Microbe Hunter Laidlaw." And in the next, "red-faced Dunkin" and then "vet Dunkin"; and for variety, "our red-faced horse doctor and silent Laidlaw." As if to show there is nothing personal in his remarks, he continues: "At a distinguished congress where scientific veterinary Pooh-Bahs from three continents made lyrical [presumably in song] remarks about our two searchers, Laidlaw got up," and of course set them right because "when to vaccinate your dogs you had to give any Tom, Dick or Harry of a horse doctor something harmless. . . ." And from here on, Doctor Laidlaw, according to de Kruif's account, ran away with the show.

DISCOVERING after some months that the influenza problem is not so nearly solved as he had supposed, de Kruif directed his thoughts or rather his pen to it again (The Flu Trappers, *Country Gentleman,* January, 1936), and this time:

"But now suddenly it looked as if God had laid an experimental animal right in the laps of our flu-trappers. The moment the blue-faced death started racing through the people of Iowa in 1918, the Govern-

ment horse doctor, J. S. Koen, watched the hogs on the farms out there begin a grunting breathing, a hacking coughing, and they got feverish and were so absolutely knocked out they wouldn't move even when you kicked them. . . .

"Koen said it was influenza. He called it hog flu. He said the pigs must have caught it from humans, and that brought a shout of laughter from vets, from docs, even from microbe hunters. Koen? Who was this Koen? Never heard of him! Human flu in piges? Ha! Ha!"

And again, "It's Pig Doctor Koen we must thank for saying in 1918: Boys, this is hog flu."

BUT even the Devil should be given his due. In a story about "The Nefarious Bug of Dr. B. Bang" (*Country Gentleman*, February, 1928) de Kruif makes some very commendatory remarks concerning a number of veterinarians, not mentioning however that they are veterinarians, except for "the learned Bang who knew half a dozen languages and was a horse and cow doctor as well as microbe hunter" and Lothe. In this story the accolade of his seeming approval is given to Sven Wall, F. B. Hadley, M. F. Barnes ("hard working, fanatical enemy of abortion"), R. R. Birch ("sensible, long headed student of abortion"), Schroeder and Cotton ("able government men"), Herbert Lothe ("well-posted veterinarian"), and some others mentioned less prominently. Because Herdsman J. R. Danks bled his cows and sent the blood to Schroeder and Cotton for the agglutination test, he is stated to be "far ahead of the majority of professional veterinarians and professors." Again he refers to Professor Bang as the Dane with a name that sounded like a gasoline filling station.

De Kruif is admittedly a good word carpenter, but his abyssmal ignorance (real or assumed and we suspect it is the latter) of veterinary matters is painful or ludicrous, depending upon the viewpoint. For a respectable magazine to publish his prejudiced diatribes is regrettable, or maybe the whole matter is just unimportant.

HORSES IN THE WORLD WAR

A bronze tablet on the east wall of the State, War and Navy Building, Washington, D. C., depicts a field artillery piece drawn by four spirited horses, with their riders and two cannoneers on the field of battle, and makes a vivid picture of action. Underneath in raised bronze letters is the following inscription:

This tablet commemorates the services and sufferings of the 243,135 horses and mules employed by the American Expeditionary Forces overseas during the great world war which terminated November 11, 1918, and which resulted in the death of 68,682 of those animals. What they suffered is beyond words to describe. A fitting tribute to their important services has been given by the commander-in-chief of the American Expeditionary Forces, Gen. John J. Pershing, who has written: "The Army horses and mules proved of inestimable value in prosecuting the war to a successful conclusion. They were found in all the theatres of preparation and operation doing their silent but faithful work without the faculty of hoping for any reward or compensation."

This tablet is erected by friends of the horse and mule in the United States, under the auspices of the American Red Star Animal Relief, a department of the American Humane Association.

* * * *

VACCINATION OF DOGS AGAINST RABIES EFFECTIVE

In a long article discussing pro and con all of the factors concerned in rabies vaccination in dogs (social, moral, sentimental, pecuniary, economic), Remlinger and Bailly (*Bull. de l'Académie de France*, Feb. 1936), have this to say on what happened in Japan:—

"After the earthquakes of 1923-1924, the economic situation of Japan was so demoralized that antirabic vaccination of dogs was abolished. In 1925, there were 1,380 rabid dogs in seven districts (departments). In 1926, antirabic vaccination was reëstablished, and 102,677 vaccinations were made. In 1929, only 16 rabid dogs were found in the same seven districts."

The authors also refer to the rabies situation of Budapest, where after enforcing rabies vaccination within the city and 10 kilometers around, for a period of several years, no cases of rabies occurred in 1935.

Charles Henry Stange
1880-1936

Dean C. H. Stange, of the Division of Veterinary Medicine, Iowa State College, died suddenly of coronary thrombosis at his home in Ames, April 26, 1936. Doctor Stange had been in his usual health and was on his front lawn at the time he collapsed, dying in a few minutes without regaining consciousness.

Funeral services were held in Great Hall of the Students' Union Memorial Building, all classes in the college being dismissed. In addition to the faculty of the college, the students of the Veterinary Division and friends of the family in Ames, about a hundred veterinarians from Iowa and a few from Nebraska, Minnesota and Illinois attended the funeral. Interment was in the College cemetery.

Doctor Stange entered the Veterinary Division of the Iowa State College in 1903; was graduated in June 1907, and began his long career of teaching in the institution the following September. In 1908, he was made acting dean and in 1909 dean of the Division of Veterinary Medicine. At the time of his death, he was senior dean in the Iowa State College.

Dean Stange was outstanding in the field of veterinary education which absorbed his whole professional interest. By persuasion, argument and example he exerted himself throughout a third of a century to elevate the standards of veterinary medicine in the United States, often stating that the veterinary profession of the future is what the veterinary schools of today make it; a profession can not rise above its source and the source of the veterinary profession is the veterinary schools. He believed the progress of veterinary medicine depended largely upon research and that every veterinary college to fulfill its obligation must also be an institute for veterinary research.

The high opinion in which Doctor Stange was held by his associates in the Iowa State College is shown by the following statement, during the funeral ceremony, by Doctor Friley, president of the college:

A great institution of learning is essentially the reflection of the lives of the fine, unselfish men and women who give to it their devotion, their energy, their intelligence and their loyalty, without stint and without thought of personal reward.

Charles Henry Stange lived with and for Iowa State College. For 33 years—a generation, as men count time—he worked with clear vision, with untiring strength, with resolute determination and with magnificent faith to the end that his chosen profession might advance steadily to higher ideals and higher levels of achievement.

His world centered in his home and his work. To both he brought the best of himself, in love, in loyalty, in sympathy and in far-sighted understanding. For four years I have been happy to call him my friend. In those years I came to appreciate deeply his wisdom in counsel, his belief in the College and its destiny, his devotion to his colleagues, and his sincerity in all his contacts.

His faith in the future was radiant. Drifting with him on the still blue waters of his favorite lake in the Northern Woods, we have talked often of the possibilities and opportunities of his profession, and I have found his ideas and plans always sound and constructive.

He held in the highest degree the love and confidence of his associates, within and without the College. And his students, scattered throughout the world, are spreading the fine traditions of service which were so dear to his heart.

The College and the State have lost one of their noble sons. The memory of his unselfish spirit, and his fine sense of duty will always remain enshrined in the hearts of those who worked with him and loved him. His plans and aspirations for his Division will be brought to realization as fully and as speedily as possible. For his was a labor of love and we who remain can do no less than carry on in the manner that would be most pleasing to him.

Doctor Stange was always active in veterinary organization matters, having been a member of the A. V. M. A. since the year of his graduation, and president in 1923-24. He almost constantly served on important committees, often as chairman, and was a member of the Committee on Education at the time of his death.

Doctor Stange is survived by his widow and two daughters.

VITAMIN C ANTITOXIC

Effinger and Gachtgens (*Klinsche Woochenschrift*, Feb. 1, 1936) find vitamin C to be highly antitoxic in its action against virulent pathogenic bacteria. Diphtheria bacilli exposed to this vitamin *in vitro* for four hours lose their power of growth. In two-hour exposures much of their ability to propagate disappears. By inhibiting the growth of the flora of the body, it detoxicates and attenuates virulence. The authors find an interesting parallelism between bacteria and vitamin C. The one tends to destroy the other and, therefore, they conclude that this vitamin may be more important for the medication of infections than has ever been suspected.

This appears to be the first demonstration showing the medicinal properties of a vitamin outside of the living body.

HORSE-DEALER TRICKS 150 YEARS AGO

Much multifarious matter has constantly been introduced relative to the age of a horse by his mouth; where (after all the observations upon the subject) it becomes an acknowledged fact by every writer, each sign is doubtful, and liable to deception in the various arts and designs of the dealers, who, by engraving and burning artificial marks in some teeth, and totally extracting (or beating out) others, render the horse of any *seeming* age most applicable to their purpose. And these faults cannot be easily discovered but by grooms or judges who are in the constant habit and practice of making such remarks and observations.—*Wm. Taplin* 1790.

In the first place, the cost of a dose [of crystal violet vaccine] for a pig is far less than half the cost of [anti-hog cholera] serum alone under the old plan. And the procedure of vaccinating with this new material is so simple that the county agent can in a few minutes teach any intelligent farmer all the intricacies involved in the task.—J. Sidney Cates, in the *Country Gentleman*, 106:4.

The age of a dog has no bearing on its immunity from distemper. If by any chance a dog has escaped natural infection and has not been inoculated against the disease, it may develop distemper at any age, and may exhibit any or all of the symptoms caused by the secondary invaders.—E. R. Blamey, in *The American Kennel Gazette*.

Distemper is, undoubtedly, a puppy disease. And while, of course, cases occur among adult dogs, the number of such instances as compared with the myriads of puppies affected is very small; in fact hardly worth considering.—Walter Busack, in *Die Hundewelt*.

Art is long and life is short, opportunity fleeting, experience deceptive and judgment difficult. The physician is a servant, not a teacher of nature. He must know what his predecessors have known if he does not wish to deceive both himself and others.—*Hippocrates*.

It is impossible to see all, to test everything one's self, and the knowledge, the experience of a single individual, compared with the knowledge, with the experiences of all men and of all ages, resembles a thin thread of water placed beside a great river. —*Rhazes* (A celebrated Arabian physician and philosopher).

PREVALENCE OF MILD BRUCELLA ABORTUS INFECTIONS

In the last few years the medical profession has become increasingly conscious of the prevalence of undulant fever. But W. Beecher Scoville, New York (*Journal A. M. A.*, Dec. 14, 1935), does not think that it has yet realized how common the subclinical and ambulatory forms may be. He is of the opinion that many such cases may masquerade under the guise of infectious arthritis, nervous exhaustion, undiscoverable focal infection and chronic neutropenia. In his case of mild ambulatory brucella infection with normal or nearly normal temperature and negative agglutination titers, but markedly positive skin and phagocytic tests, there were enough subjective symptoms to cause incapacity, yet with little enough objective signs to cause a diagnosis to be made of neurasthenia, chronic neutropenia and undiscoverable focal infection.—*Med. Times*.

A Few Things Learned in Practice

By E. T. BAKER,
Moscow, Idaho

WHEN called to see a horse with a foreign object in the eye, don't run the risk of having your umbilicus kicked against your lumbar vertebrae, by rushing in to examine the injured optic. Also, do not assure the owner you will remove quickly the offending object.

We like to back the horse into a narrow stall, and attach a strong rope halter we use in testing cattle. This halter tightens up as the animal pulls back, so that it soon changes its mind.

Next, we like to give the animal a bite of grain, or a lump of sugar, for we can save much trouble by treating it gently. However, if it wants to get tough, we can be just as rough.

We take a piece of cotton saturated with lukewarm water, and bathe the parts until all the secretions have been removed. Next, a two-grain tablet of quinine and urea hydrochloride is inserted in the inner canthus. This causes profuse lacrimation.

In a short time, the animal opens the eye a little, and if the place is rather dark, so much the better. After having discussed, with the owner, the Townsend plan or the late AAA, we make an attempt to locate the object. We take a small wad of cotton, and brush across the cornea. Often this will remove the offender. If the object sticks tightly, we then instill a few drops of hydrogen peroxide with some cotton, and tell the owner to let us know the next day how the patient seems to be. About nine times out of ten, the object has disappeared. We usually leave some eye lotion, such as a half ounce each of camphor water and boric acid solution, with one grain zinc sulphate, or a small tube of any good ophthalmic ointment.

If, in a few days, the cornea appears very red and irritated, we apply some subiodide of bismuth, and if a white scum is present, powdered calomel may be used. We also like to apply some soothing ointment to the upper lid, such as iodex or a similar preparation, so that it medicates the cornea.

Where there is much pain and congestion, we may give a capsule of equal parts chloral and powdered gum acacia, and suggest the patient be kept in a dark place for several days.

This may seem like a lot of red tape for such a simple thing as an injured eye, but we have no fighting on our hands, and the patient soon shows its relief from the intense suffering, and don't forget that relieving the pain is the veterinarian's job just as much as is removing its cause. *Curare cito, tute et jocunde* is not old fashioned; nor is it to be disregarded.

IN CASTRATING lambs or calves, have you ever tried cutting the lower third of the scrotum off with a clean pair of curved scissors, not too sharp, and then cutting the cord with equine emasculators? We then apply a little dusting powder over the scrotal incision, and dash on some of the following all around the area: Liquor Cresolis comp., one ounce; methyl violet (pyoktanin blue) twenty grains; coal oil fifteen ounces. It seems to keep the flies away, and also promotes healing. We use a shaker bottle.

On account of the dangers of hemorrhage, we use just as much care in operating on a big calf as we do on a colt. While lambs should be operated on before they are two weeks of age, many "pets" are allowed to go several months.

As with colts, we like to work in the early morning, so the animal gets good drainage during the day.

Many owners believe in "signs." That is, operations should be performed when the zodiac is in the sign of the knees, going down to the feet. We have an open mind on the subject, our business is veterinary medicine not reformation. As one old rancher, worth about fifty thousand dollars, sagely observed:

"Mebbe they ain't nuthin' in signs, an' mebbe they is."

THE past few years we have been called to see an increasingly large number of cows, heavy with calf, acting this way:

Apparently normal, they suddenly become constipated. The muzzle is hot and dry. The eyes look sunken and glassy. The general opinion of the owner and the hired man is that the calf is dead. Some cases have mastitis, while others have no milk in the udder. Some appear somewhat like atypical eclampsia; others more like parturient apoplexy. It may be a mixture of these, together with acetonemia. What we don't know about the latter ailment would fill a large book.

We used to make vaginal examinations, and find the os uteri tightly sealed. We also gave large doses of laxatives, both of saline and oil types. We only lost about nine out of ten cases with this treatment. Fortunately, the owner thought it was act of God and "nuthin' could save her ef th' calf is dead."

Perhaps other practitioners have had experiences like these.

Then again, others may have had one hundred per cent recoveries.

With the fishing and political seasons about to begin, one does not need to believe all he hears.

Until the calcium therapy came into use, these cases were about as hopeless as a genuine equine impaction.

Now, we have about 90% recoveries by giving calcium gluconate and dextrose, hypodermically; a bottle of mild laxative, (mostly to keep the owner from giving something else); a capsule of chloral and powdered gum acacia, if there is nervousness, and atropin or sterile ethereal camphorated oil, if indicated.

Usually, the patient will calve within 48 hours, and if given plenty whole oats, molasses, and grass in season, she will make an uneventful recovery.

As we look back to the days of our boyhood, we can readily remember such cases diagnosed as "dry murrain," and followed by a quiet country funeral on the back forty.

IN TREATING a case of colic in a tired, hard worked horse, do you keep in mind the therapeutic value of sodium chloride?

The loss of large amounts of chlorides through the perspiration evidently weakens the gastric digestive system. The owner feeds heavy to "give 'em power," and we see many of these recurrent colics. We have noticed we have little trouble with the first spell or two, but it is just too bad to arrive as the animal is having his last one.

Normal salt solution can be given intravenously, hypodermically or orally. In the first stage, try equal parts of calcium gluconate, sodium chloride and powdered gum acacia.

After having treated thousands of cases of equine colics and impactions, we do not think we have solved the problem of "natural cure." By that we mean the way calcium works on milk fever.

If we could devise some method to arouse the action of the nerves controlling peristalsis, and then give enough liquids or oils to assist the bowels in softening the various obstructions, we would have more recoveries.

We have tried everything we have ever heard about in these cases, from surgical pituitrin to eserin. About the only thing we have learned is that hypodermics merely shorten the duration of life. There are cases now and then, when the obstruction is in the colon, almost ready to enter the rectum, that arecolin or eserin may give the necessary stimulus to the bowel to eject this "clog." However, cecal impaction is another question.

CAN you perform an autopsy out in the field with neatness and dispatch? Do you also realize how important one of these can be in practice? It may be the means of holding a client under the most adverse circumstances. Let the owner view the "innards" for himself, and if you are fortunate in having a good looking case, he will be satisfied. Also, you will learn much yourself.

However, if you are young and full of

optimism and faith in your fellow man, don't attempt a public postmortem examination on a "no-lesion tuberculin reactor." You will be just about as popular as an Ethiopian in Rome.

We have for our equipment a Remington hunting knife, kept very sharp; pair of rubber gloves; small ax, also sharp; vial holder with four vials and holes for two eye droppers; several wide mouthed bottles for tissue samples; wash pan; bucket aromatic antiseptic; towels; flash light; and a quart bottle of water. We wear coveralls, with the sleeves rolled up, and overshoes.

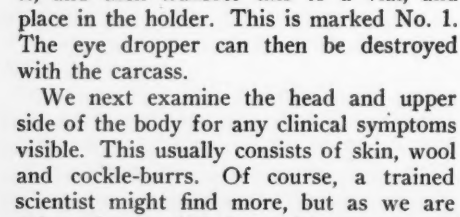
The first step is to decide what one may find, and if it is best to destroy a sick animal instead of trying to examine one already putrefied.

Suppose we are called to a band of sheep, where several hundred have died and another hundred are more or less sick. We pick out one of the "sickest" ones, and take its temperature, per rectum. This means very little, for any sheep off its feed will have a fever of around 105°F. to 107°F. The normal is around 103, depending on the coat of wool and the weather.

We next lay the sheep on its left side, and quickly plunge the point of our hunting knife into the jugular furrow, making one incision, from within out. We then bend back the head, fracturing the cervical vertebrae.

As the blood gushes out, we take a sterile eye dropper and draw a little blood into it, and then transfer this to a vial, and place in the holder. This is marked No. 1. The eye dropper can then be destroyed with the carcass.

We next examine the head and upper side of the body for any clinical symptoms visible. This usually consists of skin, wool and cockle-burrs. Of course, a trained scientist might find more, but as we are only a simple minded practitioner, we may overlook pathological lesions very commonly found in textbooks.



We next roll the carcass over on its right side, and make a window over the pleural cavity, by cutting the ribs, and exposing the heart and lungs. We take our other eye dropper and draw a little blood from the heart. If there are any suspicious looking areas of tissues, we cut off small pieces, about the size of a lima bean, and place them in marked vials or wide mouthed bottles. In cold weather, we carry them to the laboratory without any antiseptic; in summer we use powdered boric acid.

We next make a V-shaped opening over the abdominal cavity, and examine the peritoneum, the bowels, kidneys, liver, pancreas, spleen, and genito-urinary organs. Here again, we take samples of anything "lookin' peculiar," as the sheepherders say.

Suppose we are looking for internal parasites. We take our bucket and lay over several thicknesses of sterile gauze. We then cut out the fourth stomach and a few inches of duodenum, and empty the contents out on the gauze. Cold water is then slowly poured over this, until only a little material is left, which is usually the parasites. If we are not sure just what they are, we take them to the entomological laboratory, for identification. Possibly we have forgotten as much about parasitology as we ever knew, so that we are even in that branch of science.

We then give the carcass a final going over, and with our samples of blood and tissue, together with the history of the case written down in our notebook, we have a pretty good idea of what may be the trouble.

Never make a loud prognosis as to what you expect to find. Keep up a running conversation on the weather, the European situation or the coming political campaign. Otherwise, you may feel as low as a whale's milk tooth, and that is at the bottom of the sea.

In other words, carry all your instruments and equipment needed. We have never yet met a farmer's butcher knife that would cut hard butter, and the lantern is always just out of oil.

Historical Background of the Anti-bacterial Agent Davenil

By HERMAN J. ACHARD, M.D.,
Glendale, California

IT HAS been suggested that the literature on the recent immunologic developments in veterinary practice needs to be given a background, for the interest in antibody stimulation or lysinogenesis is increasing every day, and rightly so.

The subject naturally divides itself into two parts: the fundamental or technical considerations, and the more definite practical accomplishments which it is desired to stress. The former represent the natural sequence of events in the attainment of our present position in antibacterial therapy during the last fifty years, and the latter center around some researches in England during the last ten years, which eventually were crystallized into an antibacterial product known as Davenil.

FIRST, let us review the sequence of events that led to the discovery of the principles underlying this attainment. Between 1875 and 1880, Louis Pasteur in France and Robert Koch in Germany were demonstrating the principle of bacterial specificity, or the theory that certain bacteria caused certain diseases (Koch) and, more important, that the body is capable of responding in a specific way to invasion with definite bacteria (Pasteur). As a result of this, the theory of preventive inoculation was conceived and turned out to be a vital and fertile accomplishment, for it has completely revolutionized the conceptions as well as the control of bacterial diseases.

As is so often the way with a new and revolutionary idea in medicine, the practical aspects of Pasteur's discoveries remained technical attainments, and while some quite remarkable therapeutic advances were made, as in the control of rabies, the real potentialities of this new method of antibacterial inoculation did not dawn upon the profession until Sir Almroth Wright and his colleagues gave us the opsonins and bacterial vaccines (1906-1910).

As the realities of this procedure became better understood in both medical and veterinary practice, most of the developments in the technical phases of the subject consisted of improvements in the agencies used to stimulate the opsonic responses. The autogenous vaccine gave way to polyvalent stock vaccines (Sherman), and attempts were made to lessen the toxic reactions to bacterial vaccines (by this time called "bacterins") as, for example, with the sensitized vaccine (Besredka). This consisted of a bacterial suspension to which had been added immune serum from persons or animals recently recovered from infections or infectious diseases caused by organisms similar to those being used in the preparation of the bacterin. Soon it became evident that the attempt to overcome the inconveniences of monovalence with mixed stock vaccines had uncovered a new phase of the broad subject of the immune responses. Before long, suspensions of killed bacteria (as *B. typhosus*) were given for a more general antigenic effect, and the subject of non-specific protein therapy, by this time of considerable practical interest, was found to be closely related. In other words, bacterial suspensions or extracts turned out to be another means of giving reaction-arousing proteins, of which casein, albumen, and peptone already were in use.

IN THE meantime another equally important phase of immunotherapy had been conceived (by von Behring). The subject of bacterial toxemia and its control by means of specific immune serums (as diphtheria, tetanus, hog cholera, anthrax, etc.) has established itself in an undisputed position. But, from our present point of view, this is merely an interesting aside, for the antitoxins are ready-made remedies used to neutralize the toxins released by the exotoxic bacteria. In this consideration, we are concerned with the endotoxic organ-

isms, the common or pyogenic bacteria that plague the animal kingdom, and for the control of which no antitoxins are available.

The antibacterial measures previously referred to—the various varieties of bacterial suspensions and extracts, the specific proteins, the numerous non-specific proteins—are of therapeutic value because they facilitate the destruction of the invading bacteria by lysins or bacteriolysis and this, in turn, is brought about by the production of sensitizing agents known as antibodies.

The exotoxic infections are of such a nature that their control demands prompt detoxication. The antitoxic serums are valuable here because they supply stable and potent antitoxins ready for use and thus save a great deal of time. On the other hand, this time-saving feature is not available in the treatment of the common endotoxic infections, for whatever antibacterial principles can be brought to bear upon the invading organisms have to be made to order. There are no such ready-made remedies for endotoxic infections as the antitoxic serums used so spectacularly in neutralizing the exotoxic invasions.

THE time element appears to be the principal factor in antibacterial therapy, for in the natural course of events the body will automatically take care of a bacterial invasion, if—and here the time element is of transcendent importance—the animal does not succumb in the meantime.

All these artificial means are developed in an attempt to hasten lysinogenesis, to overcome the gaining infection, until the body's own supply of lysins or antibodies is sufficient to control the infection normally. Obviously, then, the value of an antibacterial agent depends upon the speed of the response to it, as well as its extent. In view of the frequent precariousness of the condition, as in peritonitis or pneumonia, the remedy should be free from detrimental reactions such as protein-shock reactions, which usually are a part of the response to antigenic protein agents.* This undoubtedly is why non-specific protein therapy is used in medicine to control old, inactive infections, such as arthritis, some forms of asthma, certain dermatoses, and chronic genito-urinary diseases.

WE now come to the present developments in veterinary practice in which we are particularly interested. From what has been submitted above, it will be seen that there is a field for an antibacterial agent that is capable of offering an added stimulus to the antibody-producing structures. Such an agent must be (1) more rapid in its antigenic effects than the actual infection, (2) polyvalent, and (3) free from toxic reactions. Also, it should be clear that such a measure will not be of value in the control of exotoxic infections; that it must be almost or quite free from protein shock-producing qualities; and that it will have to produce its lysinogenic response much more quickly than either an infection or an injection of killed bacteria. Davenil is a product which appears to meet all these specifications. We now proceed to review the course of its development.

Between 1926 and 1928, Dr. S. G. Billington, a pathologist in Leamington Spa, was seeking a means of improving the antibacterial therapy of rheumatism. Starting with various bacterial suspensions and extracts, he modified them by methods akin to those suggested by Besredka (already mentioned) and, in the course of these searches for suitable immune serums, tried the serum from the blood of distemper-infected and distemper-cured dogs. As there were many hunting kennels in this worker's vicinity and an epidemic of distemper was in progress, the material was ample.

It was found that anti-distemper bacterial vaccines were modified by treating them à la Besredka (1) with blood from infected dogs and (2) with blood from recovered dogs. These had certain acceptable quali-

*Until recently it was believed that there was a relationship between the extent and febrile nature of the shock response to antigenic protein injections and the amount of benefit. In other words, the protein reaction must involve discomfort and even detriment in order to facilitate a maximum beneficial response.

ties, but before long it was found possible to dispense entirely with the bacterial cultures. Several of Billington's so-called "inoculins" consisted of products of hemolyzed red blood-cells taken from dogs suffering from distemper in various stages. One of the most effective products was a calcium extract of the serum-protein from the blood of these dogs. In fact, it was found that calcium fixed the acceptable elements while permitting others to be discarded.

Then, the experiments were carried further, using guinea-pigs artificially infected with virulent cultures of the pneumococcus. It was found that the inoculin from the blood of these animals was potent in puppies with distemper. Then the opposite was demonstrated and, occasionally, these various experimental veterinary antigens were used in medical practice—particularly in the rheumatic patients who were under treatment at the time.

As these experiments grew in scope and number, the most interesting development became clear—the bloods from animals infected with distemper, pneumonia (chemical as well as experimental), and abortion fever, had no greater antigenic powers than those obtained from similar calcic-protein extracts from normal human or equine serum.

Billington's calcic-protein compound inoculin was at first a modified bacterial vaccine; then, in course of time, it became a modified immune serum. Finally both the bacterial cultures and the serums were discarded in its production, and in their place were used a fraction from normal horse serum and an extract of beef muscle, which were denatured in the same way as previously and finally almost completely deproteinized.

This product, named Davenil (from the near-by town of Daventry, England), has been in successful use in veterinary practice for over eight years. It constitutes a remarkable development in the control of infections with the numerous pathogenic endotoxic bacteria, which are so difficult a problem not only in veterinary but in human medicine.

BIOLOGICAL EXPERIMENTATION ESSENTIAL

Animals produce antitoxins for us; they are essential in the discovery and standardizing of new remedies. They are necessary for the diagnosis of some forms of tuberculosis. They are of great service in some aspects of human pregnancy. The modern story of foods, nutrition, and the known disorders of nutrition would be largely gaps and guesses, except for the services of the rat, the pigeon, and the dog. In brief—we would be greatly hampered in applying the known facts to society were society to stop the doctor and the biologist from the *humane* use of animals in the scientific service of man.

Animal experimentation has certainly proved its value in the biology and medicine of yesterday and of today. But what about tomorrow? Do we know it all? Or, if not, can't we find the missing answers by intuition, inspiration or logic? I see no hope in that direction. These methods failed in the past. I see no greater value for them in the future. After more than a third of a century's service in biology, it seems clear to me that intelligent and humane use of all species of animals will be necessary on the road to a fuller understanding and control of heredity, growth, immunity, nervous, glandular, and nutritional disorders.

Furthermore, the use of animals is of continuous and increasing importance in the training of the doctor and the biologist of the future. Unfortunately, parents do not seem to transmit their individually acquired knowledge and skill to their children. Each generation must learn for itself, mainly by the old slow and painful method of trial and error. If the society of tomorrow needs the services of doctors and biologists, common sense seems to say that their training is a matter of importance, a training in nature as well as in books. That means, we need animals in the training of doctors and biologists, and animals can be used, and are so used, without cruelty.—*A. J. Carlson*, University of Chicago.

The Hog Cholera Problem

By A. T. KINSLEY,
Kansas City, Missouri

IN 1932, 49 licensed companies in the United States produced over one billion cubic centimeters of anti-hog cholera serum—5,000 fifty-gallon barrels of it, and over 54,000,000cc of simultaneous virus. This was sufficient for approximately 20cc of serum and 1cc of virus for every hog, big and little, old and young, in the United States.

For the production of that amount of serum and virus over 0.5% of all the hogs in the United States were used.

For the first 11 months of 1935, over 640 million cubic centimeters of serum—3,200 fifty-gallon barrels, was released, and over 41 million cubic centimeters of simultaneous virus was produced, or sufficient to give each hog in the country at that time 15cc of serum and 1cc of virus.

Anti-hog cholera serum and virus are conceded to be the most efficient of biological products; yet cholera and vaccination has cost the swine industry over 500 million dollars in the last 20 years. For 1932, the cost of cholera and vaccination in the United States was $500,000 per million hogs; in Canada, the cost of cholera was $175 per million swine. It seems indisputable that there is something basically wrong with our methods of hog cholera control.

Cholera should not be difficult to control because, first, so far as known the virus of cholera is specific for swine. No other animal being susceptible, there is no reservoir of infection beyond our control. Think of the difference in the control of hog cholera and Bang's disease. Bang's disease affects almost the whole category of animals, cattle, hogs, horses, chickens, dogs and man. Yet, we are attempting to control Bang's disease. We are not attempting to control cholera, although judged by all available information it would be far easier to control than is Bang's disease.

Second, swine can be rendered immune to the filterable virus.

Third, immunized swine, so far as known, are not carriers of the filterable virus. Immunized hogs do not spread infection. Likewise, we have never yet found a susceptible hog that is spreading cholera, neither have we ever found a hog that has had an attack of cholera and recovered that spreads the virus.

To repeat, the hog alone can be infected with the hog cholera virus. There are no carriers. We can immunize hogs against this filterable virus and yet it is going rampant. We have not made a dent in its control.

Without going into detail, the following suggestions are offered for cholera control: Consideration must be given not only to vaccination, but also to quarantine, and I mean quarantine of the old fashioned type that was actually quarantine. We must have more stringent and effective regulations governing transportation, particularly transportation by trucks. We have very good regulations for rail shipments, but not for trucks at the present time. Third, and this, I think, is very important, we must prohibit the miscellaneous distribution and use of virus. I don't believe we will ever control cholera until we restrict the use of virus to those that know how to use it. We must eliminate lay vaccination as the first step in the control of hog cholera and then if there be any veterinarians who through ignorance or carelessness misuse the serum or virus, they, too, must be eliminated from the program.

Fourth, up to a few years ago and during the immediate past, in some states, county agents have advised farmers to assemble their diseased hogs, for clinics. They bring in ailing hogs from far and near, and cholera is spread as widely as is the return of the hogs to the farms. I have seen some veterinary clinics where the arrangements were not above criticism. Such

* Notes from an address at the annual meeting of the Indiana Veterinary Medical Association, Indianapolis, Jan. 21, 22, 23, 1936.

prolific means of the spread of cholera must be stopped.

Fifth, absolute control by state sanitary officials of all sales barns, pavilions, etc.

THERE is produced, on the west coast, a tissue vaccine for the purpose of vaccinating hogs to prevent cholera. This vaccine has been extensively used experimentally in California and has given results that justify further investigation.

At the present time, so far as I know, the production of this tissue vaccine has not been licensed by the Federal government, and therefore, is not being shipped interstate or used elsewhere than in California.

More recently, a cholera vaccine produced by the B. A. I. has been announced. The blood serum or the blood from virus pigs is the source of the virus, and this is subjected to chemical means of attenuation. This product has been used on a few hundred hogs as a cholera prophylactic with 99% efficiency.

An outline is available for the production of this vaccine to serum plants. I don't know whether the Federal B. A. I. is going to license the production of this hog cholera vaccine, and if so, what regulations will be promulgated to govern its distribution and use. The vaccine does not produce immunity for ten days to two weeks after use; therefore, it would not appear to be applicable in cholera infected herds. The statement is made that the vaccine does not produce carriers and will not produce hog cholera. What influence cholera vaccine will have is not known. What it will cost is yet to be determined.

CHENOPODIUM INTOXICATION IN SWINE

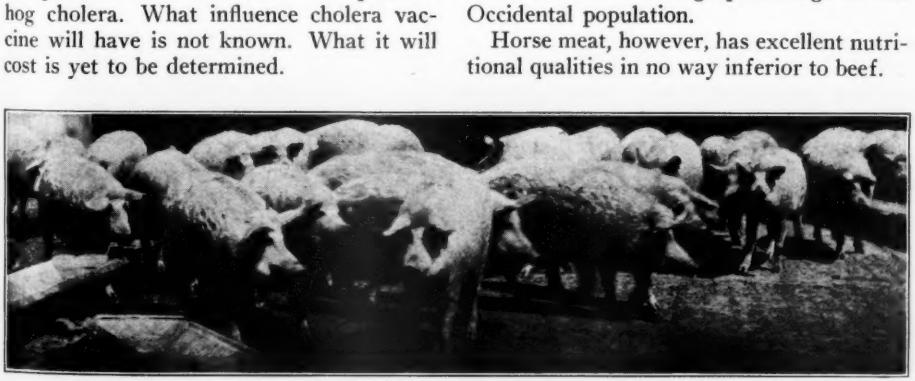
A lot of 85, 50-pound shotes were fasted for 24 hours and then given 15 minims each of oil of chenopodium in a half-ounce of bland oil. Four hours later several of the shotes became violently ill and five died. On autopsy, quantities of an inflammatory fluid was found in the peritoneal cavity and there was an intense gastroenteritis. There were a few petechiae in the lungs.

The affected swine evidenced marked depression and incoordination. This was apparently unusual for the dosage was not large. The history, symptoms and lesions seemed to indicate chenopodium poisoning. Is a preliminary 24-hour fast the best practice in chenopodium medication?—A. T. K.

THE REPUGNANCE TO HORSE MEAT

During the Old Stone Age, the horses were used only for food and ritual purposes. Their utilization for riding, carrying and hauling came about only thousands of years later, or during the New Stone Age when the horse became a harbinger of good fortune, a tribal mascot, and a sacrificial victim for religious ceremonies. Before Christian domination of Europe, horse meat was much eaten at religious festivals held in honor of pagan gods. With the coming of Christianity, "meat once offered to the idols" was forbidden in the human dietary. Thus, the eating of horse meat became taboo to a large percentage of the Occidental population.

Horse meat, however, has excellent nutritional qualities in no way inferior to beef.



Resistance to Distemper in the Pregnant Bitch

By LEON F. WHITNEY,
New Haven, Connecticut

THIS paper is written with the idea that it may open a new field of investigation of canine distemper, and likewise because the findings indicate the possibility of a new method of distemper immunization of limited application. In a sense it is not a new method since it has been going on unnoticed by man since distemper first appeared in his dogs. It is new in that it affords us an opportunity to use this method consciously where circumstances permit.

Ten years ago the late V. G. Mullikin of Lexington, Kentucky, said to the author "Old bitches never have distemper." He had owned hundreds of dogs. He had seen young bitches die with distemper. It had not been his particular experience to have known a single old bitch to die of the disease. Captain Mullikin was a good observer, but he erred in making his statement too dogmatic. Nevertheless it was based upon his experience which was extensive.

Since that time I have made wide inquiry. In general I found that when distemper sweeps through a large kennel repeatedly, many more mature male dogs die from the disease than do mature females, in proportion to their relative numbers. I found, too, that in the case of puppies the sex makes no difference—males and females, show about equal susceptibility.

I had been a breeder of bloodhounds for several years when I determined to dispose of nearly all my imported stock and buy as many old native females as I could find. The imported stock was too fragile. I was in a position where I had to do considerable traveling and so made it a point to pick up all the old bitches I could, my idea being that these old dogs showed better vigor and therefore would be better foundation stock for a pack, than dogs which might be expected to die at early ages. In all I purchased nine old bitches. These were kept until they died and not one ever contracted distemper. Only one was reported by her previous owner to have had it.

IN 1933, when an epizootic swept through my kennels killing more than half of the dogs, there were two bitches, pregnant for the first time which apparently escaped. Two brothers from the same litter died. I came to the conclusion, based on my previous experience, that pregnant bitches were immune to distemper. This, however, did not explain the occurrence the next year when these same bitches, then not in whelp, went through another distemper outbreak and did not contract the disease.

In 1935, I was equipped with larger kennels, better facilities and more time to make observations and gather data, thanks to the contributions of five friends who are also dog breeders, and who wished to further my canine research. Distemper came to us *via* three puppies which were shipped and contracted the disease enroute. It spread through the kennel of approximately one hundred dogs. Many had previously recovered from the disease. During the past year, however, many puppies had grown to maturity and were pregnant. I determined to discover what I could about these. First of all, it was noticeable that certain bitches which had gone through previous epidemics were immune. We took temperatures of every dog every day until we found that certain ones were not showing any temperature rises despite the fact that we scattered the sick dogs all around thus spreading the disease. If, after two weeks, we discovered no rises in temperature, we decided the dogs were immune. Among all the dogs which had not previously had the disease there were but two which never showed any signs. These were two dogs, a male and a female, which were the result of crossing bull terriers

with bloodhounds. They were no relation. They have gone through two enzootics with no apparent evidences of distemper, either temperature rises or otherwise.

THE important and most interesting results of the temperature readings were those of the pregnant bitches, pregnant for the first time and bred at their first estrus cycle. They had not previously had the disease. Of these, there were eleven as follows: One each of Cocker Spaniel, Newfoundland, Bassett, Setter, Pointer, Mongrel (¾ Setter, ¼ Bloodhound), Beagle, Schipperke, Bull Terrier, and two Bloodhounds.

In the case of the Newfoundland and that of the beagle, it was apparent that something was wrong. One might readily pass over their external symptoms by saying they had light colds. There was discharge from the nose and eyes, but only slight. It lasted about a week. But even in these no loss of appetite. All of the rest went about as though nothing were happening, ate their usual meals, played with other dogs, and one would not notice that they were ill.

But when we came to temperature readings, that was a different matter. All of them showed a temperature curve, quite as typical of distemper as did any of the others which were not pregnant. The only difference was that the readings were somewhat lower. The typical rise for a few days, then the normal reading and then the long pull through higher temperatures was found as in all other untreated cases.

AT THE time these temperatures were being taken I was also studying the question of determining pregnancy in early stages by palpation, (VETERINARY MEDICINE, May, 1936). Because of this fortunate coincidence a most worthwhile fact was noted. With one exception, all of the bitches which were pregnant, and which were infected with distemper as was reflected in the higher temperatures, developed their puppies for a few weeks and then resorbed them. The resorption was much more rapid than the development. It was most interesting to feel the day by day accretions in size of the developing fetuses in their protecting sacs, until they reached a certain size and then to feel them gradually disappear.

Some bitches developed the puppies until they corresponded in size to what is expected at the end of the fifth week, and then resorbed them. Others did not get beyond about 28 days. I am referring now to the 1935 epizootic in our experimental kennels. I mentioned a single exception. This was the basset hound bitch. The infected dogs were being treated with varying amounts of serum. I determined to let all of the bitches alone and see if they would be immune. The basset bitch was one of the last pregnant ones to show a temperature. When it was apparent that the others had resorbed their puppies, it was decided to try anti-canine distemper serum (Lederle) on her. An injection of 25cc was given the first day, after she showed a temperature rise. The next day 10cc was used. The fourth day she was given another 10cc. That was all the serum she had.

She was bred April 20th. On May 10th she showed her first temperature rise, 102.1°F. She received the injections as stated, and by May 26th, the temperature was down to 101.2° F. and on the 27th, to 101.0°F. June 20th, this bitch whelped seven puppies. Every puppy was as vigorous and sound as any I have ever seen. However, the largest weighed 170 grams and they averaged 112 grams. Fortunately, I had recorded the size of her previous litter which was 370 grams, average. These puppies then, weighed only about one-third normal. They looked like puppies of a Pomeranian rather than those of a 45-pound dog. The small size of these puppies was strikingly apparent.

In the case of another bitch, one can see how the disease progresses and resorption takes place. She was bred June 16th. First signs of distemper noted June 30. Her fetuses continued to develop until they were about as large as English walnuts,

then resorption was noted and by July 25th, no evidence of embryos could be detected although the uterus felt somewhat congested and quite firm. Generally, resorption is complete, so far as one can determine by palpation, in about ten days.

DURING the winter, 1935-1936 another epizootic broke out. This came from a 14-months-old Samoyed bitch which was shipped away to be bred. She was returned in good shape. There was no distemper at the kennels to which she was sent. She was placed in quarantine when she returned and kept there for one week. She seemed all right and then was placed in the run with her two sisters. About a week later one of the sisters became very sick. We began taking temperatures again. Incidentally, we took that of the bred bitch and found to our astonishment it was 103° F. Yet she showed no signs whatever of illness. Then the other sister began to show a temperature. Soon it had spread to other pens. Before long, we had 65 dogs and puppies sick with distemper.

I was palpating the bred bitch and felt her puppies develop until they were almost exactly the size of hens' eggs when I noticed they began to shrink. Certainly no one would recognize that she was sick except by taking her temperature. As it was, when we began taking it, she was almost over the disease. We were too late with our serum injections, and both of her sisters died.

That all of the bitches which had distemper mildly while they were pregnant during the previous outbreak were immune could not be determined until this past epidemic. Each was placed in a pen with dogs that were very sick, and not one bitch contracted the disease. There seems no doubt that they had had distemper during the previous outbreak and that they are permanently immune.

IN ORDER to determine what would happen in the case of a bitch which contracted distemper when she was well along in the gestation period, I placed such a bitch in a pen with infected dogs and soon found that she had developed it. She was given no treatment and allowed to deliver her puppies. She was six weeks pregnant when she was exposed. Within five days she showed a temperature rise but no other symptoms. It seemed that she would have no trouble but almost the day after she whelped, she began to show severe symptoms. She had one convulsion, and possibly more, although we saw only one. Then her puppies died. She pulled through, but it was a long, hard siege.

From this and from other evidence it seems apparent that something closely associated with the developing fetuses must exert a protective influence against distemper. If, as soon as the puppies were born there apparently was no more of this, and when the bitch is deprived of it, and has no more protection than a non-pregnant bitch, surely this must be found associated with the fetuses.

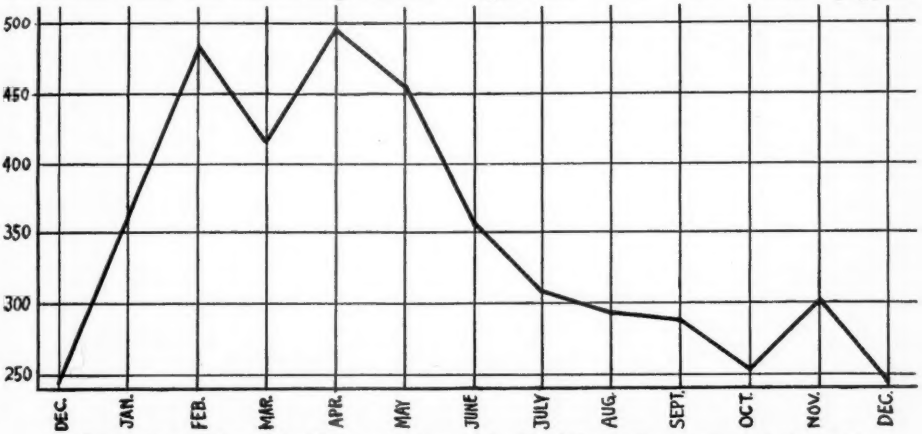
WE HAD here an ample group of controls. Of 129 dogs, 65 had distemper symptoms, including the expected disturbances such as discharge from eyes and nose, loose discolored evacuations and abnormal temperatures. Twenty-one of the 65 died. Of the 64 dogs that did not contract the disease, with two exceptions, all were over a year old, some as much as eight years of age and had had distemper previously. This includes the eleven bitches mentioned which have to my belief, had distemper, resorbed their puppies and become immune. Whereas, young dogs and bitches of all ages up to a year and several older dogs recently acquired, became affected, the eleven seem permanently immune.

It might be argued that the resorption caused the abnormal temperatures. But in the case of the very old bitches mentioned, (VETERINARY MEDICINE, May, 1936) where this has been observed, no rise in temperature was recorded.

During our first bad epizootic an attempt was made to determine the nature of this protective influence. In the pregnant bitch the leucocyte count is much higher than in the non-pregnant. Hence it was decided to

try leucocyte extract. This was used in varying amounts on a litter of English setters without beneficial results. All seven puppies died.

Simultaneously, it was decided to attempt to determine whether the protective influence might not be the female hormone. Starting with doses of 8,000 units the first day, the doses were reduced to 1,000 units, given daily. One dog to which these doses were given died. He was the smallest, weighing 18 pounds. The largest, a hound, almost full grown, lived as did also an Airedale. But comparisons of temperatures with other non-treated dogs showed that during the same period (late July) the course of the disease was about the same in non-treated dogs.



Seasonal variation of incidence of estrus cycles in bitches. Curve covers 4,242 cycles as determined by birth registrations in American Kennel Club and Chase Publishing Company. No peak is shown in fall months because fewer bitches are bred then.

Further, during our most recent outbreak of distemper two puppies given theelin at the rate of 1000 units per day developed the disease and died as readily as did two controls which were not treated. The conclusion with regard to the use of amniotin in the treatment of distemper, is that if it has any influence, then very large amounts must be given, and if that is the case from a practical point of view it will be more expensive than the serum method. We do not know how much theelin the pregnant bitch introduces into her blood stream daily, so that if theelin is the protective influence, then she is well protected.

IT WOULD seem that the only conclusion to be drawn from this study is that the female sex hormone, when injected in the small amounts used, has no protective influence.

Possibly, some as yet undetermined hormone of the amniotic fluid is concerned in the protection. At any rate, a preliminary experiment was devised of drawing blood from an immune, pregnant bitch, making serum from that and injecting it into two of ten puppies, the remainder of which were receiving ordinary serum. These two puppies lived whereas of the other eight significant. The two treated puppies only two lived, which may or may not be weighed 12 pounds and 10 pounds, respectively. They each received a total of 50cc of serum. Their temperatures were as high as those which received the ordinary serum but they showed only slight evidences of distemper, and were the first to exhibit normal temperatures. This work naturally will be continued.

MAY it not be that one reason there are so many dogs alive in the world despite distemper is partially due to the ease with which pregnant bitches overcome distemper? Curiously enough when one makes a comparison of the season at which distemper is most prevalent, one finds that at just these times there are the greatest

number of bitches in whelp. The worst distemper months according to the experience of most dog breeders are the early spring or late fall months, coincident with the time when most bitches are in whelp. The accompanying chart shows the times of the mating cycles of 4242 bitches including 2000 south of the Mason and Dixon line. These were derived by deducting two months from the birthdays for dogs recorded in stud books. It will be noted that the fall season shows no decided peak. This is because dog owners dislike breeding bitches to rear winter litters, and also because the 2000 dogs south of the Mason and Dixon line were foxhounds whose owners want to run them through the fall and winter months and do not want litters at this time. Thus where one figures natal days, one finds this lack of litters in the fall months. But we know that there is almost as much peak then as in the late winter.

IT WOULD seem that this phenomenon accounts for many cases where bitches are believed not to have conceived. The average dog owner knows nothing about determining pregnancy by palpation and the only indication which he has of whether or not a bitch conceived is whether she whelps. If she does not the stud dog may be blamed. When one considers the splendid opportunity of contracting distemper through shipping dogs, and then realizes that so many dogs which are shipped to breed fail to conceive, it becomes apparent that not a few must fail because they contract distemper enroute. These are then permanently immune.

It seems to me that many of the phantom pregnancies must be caused by this resorption too. I have been to kennels and have seen bitches with abdomens sufficiently distended to make me sure they were pregnant. Then I have learned from the owner that the bitch did not whelp. In such cases, there would seem to be a partial explanation in the fact that the bitch resorbed her puppies and escaped notice as having had distemper.

It would seem therefore that the simplest and most natural method of immunizing against distemper in the case of bitches is to expose them to the infection while pregnant. This will, generally, mean losing a litter, but possibly by treating the pregnant bitch with serum, the litter may be saved also. It has worked so far with our dogs. One must not expose the bitch late in the gestation period however or fatality may result. The best time is very soon after the bitch has been bred.

I wish to express my gratitude to the five friends who made this study possible financially and to E. R. Squibb and Sons for their cooperation in furnishing Amniotin and leucocyte extract.

Summary

The pregnant bitch has the ability to cope with distemper much better than her unprotected brothers and sisters.

The bitch which has had distemper while pregnant and has overcome it is as much immunized as is the dog or bitch which has had a severe attack. Immunization is permanent. The pregnant bitch attacked by distemper generally resorbs her embryos. Treatment of pregnant bitches with liberal amounts of anti-canine distemper serum may prevent the resorption of puppies.

Distemper, overcome in this way, may account for many cases of so-called phantom pregnancy. It also may account for many cases when the bitch is believed not to have conceived, when the stud dog is blamed undeservedly.

The nature of the protective influence is not known. Experiments with theelin indicate that, in the doses used, it is not effective.

Leucocyte extract failed to accomplish the same result as pregnancy.

If one is willing to sacrifice a litter of puppies it would seem that the simplest way of immunizing bitches against distemper is to breed them and then, as soon as pregnancy is assured, to expose them to distemper. Possibly by the use of ample serum even the litter can be saved.

CYSTICERCOSIS IN DEER

November 14, 1935, the ambulatory clinic class of the Kansas State College proceeded to the Sunset Park Zoo, Manhattan, Kansas, to examine some deer reported to be affected with mange.

Upon reaching the Zoo, we were confronted with the problem of catching and restraining the buck in order to examine one of the young does and obtain some skin scrapings as some half dozen deer evidenced alopecia. The buck was in the rutting season and in attempting to throw a lariat on him, one of the students was attacked with lightning speed and would have been gored to death but for his presence of mind in throwing his arms around the buck's neck and holding on until help reached him. Any not convinced of the dangerousness of buck deer in the rutting season had their doubts removed by this demonstration.

Two of the young does were caught and skin scrapings were taken to be examined at the laboratory. Both does showed considerable alopecia, particularly on their backs and sides.

In looking over the pasture in which the deer herd was quartered, a doe was found dead. From all indications and the information obtained from the caretaker, the doe had probably been dead about four hours. This carcass was taken to the clinic and a careful post mortem examination held.

Post Mortem Findings

A marked croupous enteritis throughout the intestine and several pieces of red auto rubber tubing were found in the abomasum of the dead animal. The largest piece of tubing was about four inches wide and six inches long.

Three cysts of tapeworm, later identified as *Cysticercus tenuicollis,* were found on autopsy.*

The tapeworm cysts were found in the peritoneal cavity and liver. The cysts were rather large in size, the largest being 6.5cm in length, 6cm in width and 5.5cm in thickness.

The *Cysticercus tenuicollis* is the cystic or larval stage of the dog tapeworm *Taenia hydatigena.* It is found in the peritoneum and more rarely in the pleura of ruminants and hogs. It has also been reported from monkeys and rodents.**

Diagnoses

Death was probably due to the croupous enteritis as a result of the rubber tubing in the abomasum and possibly the stopping up of the pyloric opening of the abomasum as shown in the lack of feed in the intestine on autopsy.

The skin scrapings were negative for parasites.

The alopecia on the backs and sides of the doe autopsied and others affected could be attributed to some dietary deficiency. The abberation of the appetite evidenced by the rubber tubing in the abomasum lent support to this view; or mating attempts of the buck might have caused the hairless condition on the backs and sides of the does.

ROBERT E. GOUGE,
Kansas State College, '36.
Manhattan, Kans.

* * * *

THE CARE OF JACKS

Rising values of mules and horses and greatly increased prices being paid for jackasses due to the increased demand for them for breeding purposes have made the potency and fertility of the jackass an economic problem of high moment. Many of the jack breeders report that the depression is the cause of jackasses shunning their duty in producing mule colts, according to a survey. It seems that when the prices for mules fell to a record low in the late '20's, the value of jacks dropped even more rapidly. Many were shot to avoid feed costs and thousands of other jacks were turned out to pasture with mules, jennets or cows.

Experienced breeders avoided such practices. They know that the jackass is a stubborn subject. Once jacks learn to roam with their kind, they shun the horse species

*Identification—Dr. J. E. Ackert, Dept. Zoology, Kansas State College.

**Underhill—Parasites and Parasitisms of Domestic Animals.

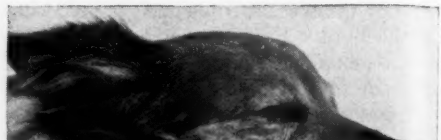
and will not mix with mares. So the depression is teaching many of the younger jack and mule raisers what old timers in the business learned generations ago. Information gathered from the leading breeders in Kansas, Missouri, Kentucky and Tennessee emphasizes the necessity of a proper feeding and pasture schedule and the proper association with horse colts or fillies when young. Jack and jennet colts should be weaned at seven to eight months.

From that time on the jacks are never allowed to see at close range jennets or mules until after the jacks are trained to breed mares. Until the jacks are 24 to 26 months old they run with a gentle stallion colt, smaller than themselves and after that they are put singly in paddocks with access to open sheds or open barn stalls. When ready for breeding, mares are always bred before any breeding to a jennet is allowed. —*Wayne Dinsmore.*

PUS IN THE MAXILLARY SINUS

December 3, 1935, a ten-year-old Pomeranian was presented to the veterinary clinic of the Kansas State College. There was a history of escape of pus, from a fistulous tract, just in front and below the eye.

A diagnosis of a lacrymal fistula was made. This term is entirely misleading as to the cause of the condition. If the owner had been more observing he would have noticed a swelling along the region of the maxillary sinus previous to the establishment of the fistulous tract. The old name for this condition is a misnomer, since the fistulous tract lies wholly within the bone and none of the facial sinuses is involved, as Crane has pointed out (*Veterinary Medicine,* April, 1932). An infected tooth is usually, perhaps always, the source of trouble. Examination of the teeth rarely reveals anything to cause them to be suspected of being the source of the trouble. Nevertheless, the treatment for this condition is the extraction of the fourth upper premolar tooth. This provides adequate drainage for the fistula. Although this tooth may, and usually does, appear sound, it is diseased at the root and permanent healing of the facial opening will not be attained until it is removed.



This patient was anesthetized with nembutal. The gums were cut away from the fourth upper premolar and the tooth split with molar cutters. After dividing the tooth into anterior and posterior portions, removal was very simple. A fine probe could then be inserted in the opening in the face and passed through the tract and into the mouth through the tooth socket. This tract was syringed out daily, using alternately hydrogen peroxide and saturated solution of sodium perborate. After a week of this treatment, the dog was sent home to be returned at three-day intervals for treatment.

Three days later the animal was returned to the hospital for treatment. At this time the character of the discharge had changed to a mucous-like substance. To stimulate more rapid healing, the opening in the face was cauterized with lunar caustic. Flushing out the canal and cauterizing the area was repeated three times. Healing was complete in 21 days.

KEITH LASSEN,
Manhattan, Kans. K. S. C. '36.

BIGGEST DOG CEMETERY

The world's biggest dog cemetery is in Paris; more than 20,000 dogs are buried there. It is located on Dog Island in the Seine, once notorious as the rendezvous of bandits. Dogs of famous French men and women are buried there, and many epitaphs on the stones show that American and English owners also have buried their dogs there.

Do You Remember?

1. Question. What effect does bilateral section of the phrenic nerves in dogs have upon their respirations?

Answer. Although their diaphragms were completely paralyzed, dogs in which this operation was performed appeared almost normal—even after exercising.

2. Q. What is the direct cause of the congestion of the blood vessels of the head during severe or prolonged straining?

A. Straining is usually done by making strong attempts at expiration with a closed glottis; this materially increases intrathoracic pressure which in turn collapses the anterior vena cava. This then results in a passive congestion of the blood vessels of the head.

3. Q. Define: acapnia; apnea; apneusis; eupnea; dyspnea; and hyperpnea.

A. Acapnia is a condition in which the carbon dioxide content of the blood is lowered, as in apnea vera. Apnea is the cessation of respiration. Apneusis is a condition in which the inspiration is prolonged, or the breath held. Dyspnea is difficult respiration. Hyperpnea is a condition in which the rate and depth of respirations are increased, but not difficult.

4. Q. When pure oxygen gas is breathed, how much more will be found in the arterial blood than when ordinary air is breathed?

A. The hemoglobin of arterial blood (oxyhemoglobin) normally contains about 94% oxygen; therefore breathing pure oxygen gas could not cause the absorption of more than an additional 6% by the blood.

5. Q. What factors cause the "stuffy feeling" associated with closed or crowded rooms?

A. This condition was formerly thought to be due to a decrease in the oxygen or increase in the carbon dioxide content of the air. Modern experiments have shown that such discomfort is due to improper temperature, humidity or air circulation.

WESLEY O. KEEFER,
Columbus, Ohio.

A DOG AND A $3,000 RING

At 9:30 P. M., March 25, 1936, Mrs. D., of the Oklahoma Biltmore Hotel, phoned me, stating that her Chow pup had swallowed her $3,000 diamond ring about an hour previously. I suggested that she bring the dog to the hospital at once. At 9:45, two bell boys and the bell boy captain arrived with the Chow, which was smeared from head to tail with castor oil.

A one-twentieth grain dose of apomorphine hydrochloride brought forth only food, and high enamas were given, but no ring appeared.

A fluoroscopic examination revealed a dark object just posterior to the stomach. The owner would not consent to an enterotomy, so she was advised to take the dog home and feed him one-inch squares of cotton pads with a slice of lean beef on each side.

March 28th, at 9:30 A. M., the owner telephoned me that the dog had just jumped from the bed to the floor and straining slightly, had passed the ring followed by a pellet of cotton.

H. J. JEWELL,
Espy's Dog and Cat Hospital.
Oklahoma City, Okla.

ALASKA INDIANS HAD BRAIN SURGEONS 2,000 YEARS AGO

Indians in Alaska 2,000 years ago, had brain surgeons available. A specimen of this flaw or friction. In actual fact, it is as much a biological product as the bodily already perfected, needing no exercise or instruction, but sprung into being ready made to carry out its functions without ancient surgery, the first unearthed in Alaska, is the discovery announced by Dr. Ales Hrdlicka of the Smithsonian Institute. Digging on Kodiak Island, he found the skull of a man who had a cavity about two inches long and half an inch wide scraped in his skull down to the thin film of bone left over the brain. The wound healed perfectly, showing that the Indian brain doctor knew his business.—*S. N. L.*, 28:766.

The Auburn Home-Mixed Dog Ration

By W. D. SALMON,
Auburn, Alabama

ALABAMA Experiment Station Leaflet No. 13, Dog Feeding Suggestions, was recently discussed in this journal by Dr. John W. Patton. It is not my purpose to enter into any controversy with Dr. Patton regarding *his opinion* of what constitutes a good dog food. Hypothetical statements and personal opinions were the bases of some very profound discussions in the age of the philosophers but they are not so important in the present scientific era. It is facts derived from experiments or trials which count today. Hence, I wish to point out a few facts which were omitted from Doctor Patton's discussion.

Since leaflet No. 13 states that high quality laying mashes are fairly satisfactory as dog foods, it can scarcely be considered as derogatory of the Auburn dog ration to compare it with the Michigan state formula for poultry. Dr. Patton states that the only essential difference in the two formulae is more meat scrap in the Auburn ration and an attempt to supply vitamins with fish meal instead of cod liver oil. He fails to mention, however, that the differences in the two rations provide about 35% more protein and 20% less fiber in the Auburn ration than in the Michigan State ration; moreover, a much higher percentage of the protein in the Auburn ration is from animal sources; the significance of these differences should be apparent to anyone who is familiar with the food requirements of the dog. It may be mentioned, however, that the Michigan State formula contains more protein and less fiber than some of the highly advertised commercial dog foods which are on the market today.

Adequate Protein.—The Auburn dog ration compares favorably with the best commercial dry foods for dogs in both quantity and quality of proteins. Incidentally 18 of the 33 dry dog rations or biscuits which are registered with the Alabama State Department of Agriculture show meat scrap or meat-and-bone meal as an ingredient; moreover, 26 of the 33 have guaranteed protein contents lower than that of the Auburn ration; and finally, nine of these commercial rations do not indicate the presence of any milk protein, despite the fact that the value of milk proteins in supplementing cereal and meat proteins has long been recognized. Since they are closed-formula feeds, it is not possible to state how many more of them have *less* milk protein than the Auburn ration. The Auburn ration contains more than 23% of protein of which 15% is from animal sources, 3.6% being from milk. In other words, milk proteins represent 15% and combined animal proteins 63% of the total protein content of this ration. There is, therefore, nothing to indicate that the ration does not provide an adequacy of proteins. (Incidentally the protein values for yellow corn meal and wheat middlings as given in Dr. Patton's article are incorrect on the basis of average analyses shown by Henry and Morrison. They should be yellow corn meal 3.36% instead of 2.6% and wheat middlings 3.56% instead of 2%. His figure of 21.46% for the protein content of the Auburn ration is, therefore, approximately 2.3% too low. In a sample of this ration collected by the Mississippi State Department of Agriculture and Commerce and analyzed by the Mississippi State Chemical Laboratory, the protein content was 23.75%.)

The Fiber Content.—Then there is the question of bulk. Dr. Patton says:

"In this respect the Auburn ration is poorly formulated for the good reason that it is difficult to compound a dog food which contains in any considerable measure, the so-called carbohydrate feedstuffs and not exceed the recognized tolerance of dogs for fiber. The problem, therefore, in preparing dog food formulae is to keep the bulk as low as possible and still to be confronted

with the food-stimulating evacuation," which is just another way of saying what I said in Leaflet No. 13: *The ration should be sufficiently concentrated to provide enough energy without overburdening the digestive system but at the same time it should have sufficient bulk to prevent constipation.* The fiber content of the Auburn ration, when alfalfa leaf meal with a fiber content of not more than 18% is used, is 3 to 3.5%. This compares very favorably with the fiber content of the 33 commercial foods referred to above whose fiber content ranges from 1.25 to 8%. It is clearly evident that there is no basis of fact for such witticisms as "wheat straw and sun-flower silage" or "10 bales of good prairie hay and a few forkfuls of No. 2 light clover and timothy mixed"; they add neither dignity nor thought to the article but rather serve to emphasize its prejudiced viewpoint.

Economy.—The Auburn dog ration is relatively cheap by the pound as compared with commercial dog rations; dog feeders also testify that it is economical to buy and to use. Its economy may be illustrated by the experience of one feeder in Alabama who was paying $133.50 per ton for a commercial dog ration; he obtained the formula for the Auburn ration, purchased the ingredients, and mixed the ration at a cost of less than $40.00 per ton, including the cost of mixing. This dog owner insists that his dogs have been kept in better condition by the Auburn ration than they had been by the high grade and also *high priced* commercial ration. Incidentally, this dog owner works his dogs very hard, sometimes running them all night long as often as three nights a week. On the first ton of the Auburn ration that he fed, this dog owner saved more than twice as much money as the Alabama Experiment Station paid for the publication of Leaflet No. 13. He had used about eight tons before the leaflet was published. In other words, before Leaflet No. 13 was even published, the Auburn dog ration had saved one tax-payer of this state several times its cost of publication.

Results.—Although Leaflet No. 13 was quoted extensively and discussed in detail by Doctor Patton, he somehow overlooked a very significant statement.

"It [the Auburn ration] has been given a rather thorough trial by numerous dog owners during the past two years, one of whom has fed an average of 20 dogs on it throughout this period. The results obtained seem to justify its recommendation as a satisfactory dog ration that can be mixed at home with an attendant economy in dog feeding."

More than a year has now elapsed since the publication of the leaflet and the use of the Auburn dog ration has increased markedly. Two mills in Alabama are mixing the ration and have informed me that their sales of this ration average 30 to 40 tons per month. This volume has been attained not by high powered advertising but by the recommendations of users of the Auburn dog ration. I have made special inquiry from the officials of these mills in regard to whether they have had any complaints by their customers and have been assured that the ration is giving satisfaction.

Further Work Desirable. — It is not claimed that the Auburn dog ration is a perfect ration. The available knowledge in the field of canine nutrition is very incomplete. The pressing need for knowledge regarding the nutrition of other farm animals and administrative restrictions have severely limited the development of research programs in this field. It is the function of the state experiment stations, however, to serve their constituency and *that part* of their constituency represented by the owners of dogs should not be denied this service any longer.

The Alabama station has a continuous program of both fundamental and practical research in animal nutrition. If it is possible to develop a better formula than the present one for the Auburn dog ration, it will be made public as soon as it has been thoroughly tested. Meanwhile dog owners who have tried the Auburn dog ration and have found it satisfactory will continue to save money by using it.

Abstracts

WHELPING IN FOXES

For best whelping results with foxes, Olsson[49] has found the following treatments successful: When the vixen fails to come into estrus, 50 to 125 units of prolan are given. When the foxcubs do not develop well, or do not eat well, the following prescription is used:

Phosphorus	0.01
Vigantol	1.0
Calcii lact.	3.0
Ol. jecor.	100.0

M. et F. Sol.

Sig. One teaspoonful every other day, every second week.

Yohimbin in doses of one to 2mgm orally, stimulates the potency of male foxes. To facilitate the act of whelping, three to five units of hypophysin are given. Edema and inflammation of the udder are treated with hot fomentations. As a prophylactic measure, a tablespoonful of a 1% to 2% solution of potassium iodide is given. Vixens showing signs of cannibalism, or other nervous symptoms, are to be eliminated.

THE MICROSCOPIC DIAGNOSIS OF STRONGYLOSIS

The faults of fecal microscopy are emphasized[50] in making differential diagnoses of "digestive strongylosis" because of the close similarity of the eggs passed. "All of the eggs have neighboring characters which render the differentiation uncertain." They all show elliptical elements with a thin shell measuring 70 to 90x40 to 50 microns. All of the "digestive strongyles" deprived of a buccal capsule, lay eggs evacuated with a fine morula containing from 16 to 64 blastomeres, while the eggs of those having a buccal capsule contain from 4 to 16 only, but even this character has value only when the examination is made on fresh material. Moreover, the clinical entities described under the name of "gastrointestinal strongylosis" or "verminous enteritis" are generally an association of parasites, especially the Trichostrongyles of the genera *Haemonchus, Trichostrongylus, Nematodirus, Cooperia, Ostertagia* and others. The *Oesophagostomum radiatum* may be excluded since its pathogenesis does not concern the adult worm. It does its harm in the larval form in the mucous membrane. Hence a microscopic examination of feces made at the time of the illness is negative.

Inasmuch as the pathology and vital history of the various strongyles differ in important respects, clinical diagnoses and autopsies are inseparable in the intelligent handling of strongyloses. They are not easily distinguished one from another by fecal microscopy.

EVERY FARMER AN ANIMAL DOCTOR

Doenecke agrees with Disselhorst[72] that actual veterinary training to farm boys is out of question with the exception of fundamentals concerning epizootic and enizootic diseases (which information is useful and indispensable to the farmer), first aid in obstetrics (because professional service cannot be had always at the instant), and the application of first aid to external injuries. Other than the foregoing exceptions, all attempts at instructing agricultural students in the science of veterinary medicine must result in superficial knowledge that will bear the stamp of ignorance.

On the other hand, the salient point of real useful veterinary teaching in agricultural schools should be the imparting of a sound knowledge of anatomy, and the application of the anatomical knowledge towards an understanding of physiology, especially the function of nutrition, to form the basis for the demonstrations in judging farm animals.

[49] Olsson, E., 1935. Suggestions for the Breeding Period in Foxes (Transl. title). *Svensk. Vet. tidskr.*, 40:3, pp. 91-95.

[50] Carpentier, 1935. Biennial Veterinary Conference (in France); *Recueil de Médicine Vétérinaire*, 111:11, Nov., 1935.

[72] Doenecke, H., 1935. Der Tierärzt als Dozent an landwirtschaftlichen Lehranstalten; (The Veterinarian as Teacher in Agricultural Colleges). *Tierärztl. Rundsch.*, 41:33, pp. 539-43.

SANITARY MILKING AND MILK

The use of an apparatus to be attached to the pudendum of the cow for catching feces or urine voided during milking is reported.[52] The purpose of the apparatus is to prevent the contamination of the milk while cows are being milked. It is placed over the anus and vulva and held in position with straps and surcingle, and conveys the excrements to a bucket resting upon the floor. It was conceived and first fabricated by Madame Galtier, obviously a milkmaid with a flare for milk production of a more hygienic type than usual. Certainly, splashing manure and urine evacuated as cows are being milked is something worth capturing even in Grade A production, where every other sanitary gadget is employed to curtail contamination.

Once upon a time the redoubtable Doctor Evans, hygienist supreme of the Chicago Health Department, computed in tons the amount of fecal material the population of that city consumed in its milk. We have forgotten the tonnage, but it was not small. Of course, in so far as large cities are concerned, those were the days when cows not carrying a heavy carpet of manure on each thigh through the winter were quite exceptional. Anyone believing that cows with manure-carpeted thighs have entirely passed out of the picture where milk inspection is not enforced, is laboring under considerable delusion. The human animal is still consuming considerable cow's dung and besides, heroically, he lets the emulsion get worse before imbibing.

Milk, aristocrat of the diet, is truly a wonderful thing to have survived its man-made faults. What is most strange is that dairy science is so advanced and dairy practices so deficient. The latter is as much of a farce as the milk producers can make it. Doctor Fitzpatrick said at a recent meeting of the Illinois State Veterinary Medical Association, that science is always 30 years ahead of its application. Dairy science is 50 years ahead of sanitary milk production. It must still be "cooked" to keep down the casualty list of consumers and a milk inspector is about as popular as the mortician, notwithstanding that were a milk inspection service developed "by the people and for the people," the farmers themselves would be the greatest beneficiaries.

[52] Boissiere, *Rec. de Méd. Vét.*, 111:11, Nov. 1935.

* * * *

TETANY AMONG CALVES

Calf tetany is not rare among nursing calves[53] which are fed predominantly or exclusively upon milk. The symptoms are increased nervousness, involuntary movements, staring eyes, occasionally convulsion, bellowing and salivation. Sometimes, degeneration of the entire muscle groups will take place; the area in question resembles boiled veal in appearance. The muscle is edematous; hemorrhages, varying in extent, are apparent. Blood analysis reveals a disturbance of the balance of mineral metabolism, especially with regard to the magnesium and calcium intake and outgo. The primary cause is probably a nutritional deficiency excited by excessive amounts of protein intake. At the first signs of this disturbance, such as restlessness, nervousness, one should at once substitute sliced beet roots and molasses for milk. In one case recovery was brought about by intravenous injection of calcium and magnesium chlorides.

* * * *

ANIMALS THINK

The ability to think independently belongs not only to man, but also to the higher animals.[54] This is exemplified objectively and subjectively in the "number language." Thus a dispute which has occupied man time and again, has been decided to the effect that the ability of man and animal to think is not a principal difference, but a gradual difference in the stimulus originating in the cerebrum, and that man and animals are merely different forms of life.

Dogs do not comprehend words or language in the same sense that man compre-

[53] Sjollema, B., 1935. Calf Tetany (Trans. Title). *Tijdschr. v. Diergeneesk.*, 62.7, pp. 343-53.

[54] Müller, M., 1935. Das Zahlsprechen der Tiere; (The Number Language of Animals). *Tierärztl. Rundsch.*, 41:30, pp. 483-87.

hends them,[55] because they lack the basic premise for the development of a language. Comprehension of words and language can take place only among such living beings which themselves speak an articulated lip language, and which are able to form ideas. Animals understand the human language only in so far as they have learned to react to certain spoken sounds with a definite action, in conformity with their training.

TREATMENT OF ARTICULAR WOUNDS

During the last few years[56] the careful use of antiseptics in treatment of wounds invading capsular ligaments in horses, has made their prognosis more favorable than before. The application of the prophylactic antiseptic method has, as a rule, prevented suppuration of the joints in the case of fresh wounds. Infected wounds of the joints, too, may be treated successfully by this method, although a few cases fail to yield. The antiseptic treatment is well adapted to the treatment of articular wounds in horses. The prophylactic antiseptic method is especially indicated for fresh wounds, because an infection is likely to take place in any event. The choice of the antiseptic must depend, to a certain extent, upon the sensitiveness of the articular endothelium. Therefore, in addition to bactericidal properties of the disinfectant, its harmlessness to the tissue is important.

BLACKLEG AN INTOXICATION

Whether to use a vaccine prepared from the muscle juice of cattle dead from blackleg, or one prepared from killed bacteria and spores, to establish immunity against blackleg, depends on the answers to the question, is blackleg a toxemia or is it a bacteremia.[57] It is true, it has never been possible to demonstrate a toxin comparable to tetanus toxin, either in the living animal or in the test tube. Nevertheless, the autopsy of a blackleg carcass gives decidedly the impression of an intoxication emanating from a local cause. This observation agrees with the fact that at the beginning of the disease, the organs and tissues are sterile, excepting those of the primary seat. In cattle, dead from blackleg, the bacteria are found in all the organs. This can be explained reasonably, by postmortal migration. From a theoretical and practical point of view, there does not seem to be any necessity to abandon the hitherto tested and tried filtration method.

PRACTICAL THERAPEUTIC SUGGESTIONS

Diarrhea.—Ariess[58] reports his successful method of treating diarrhea in nursing calves, colts and dogs. His therapy makes use of the oral application of a mineral powder consisting of magnesium oxides, calcium, silicium, iron and organic matter. The treatment is supplemented by the substitution of doses of absinth tea for dam's milk.

Canker.—The treatment of canker of the hoof[59] is tedious, but it promises success when energetic measures are adopted in the beginning. Surgical measures cannot be dispensed with entirely. Hoof pastes consisting of zinc acetate, copper nitrate, lead sulphate and arsenous acid have given remarkable results.

Intravenous Injection—Ariess discusses the possible injuries resulting from intravenous injection of oil of turpentine.[60] He concludes that the proprietary oil of turpentine preparations are to be preferred to the raw drug in intravenous therapy.

Erysipelas.—Ariess agrees with other authors that swine erysipelas[61] is ushered in by a toxic myocarditis. This condition is

[55] Baege, 1935. Hat der Hund ein Wortvenständnis? (Does the Dog Understand words?). *Der Hund*, 36:20, pp. 532-33.

[56] Freudenberg, 1934. Die Prognose und Therapie der Gelenkwunden beim Pferd mit besonderer Berücksichtizung der Rivanollösung; (Articular wounds in Horses; Their Prognosis and Therapy). *Zeitschr. f. Vet. Kunde*, 9:10.

[57] Lourens, L. F. D. E., 1935. Blackleg Filtrate and Blackleg Formol Vaccine (Trans. Title). *Tijdschr. v. Diergeneesk*, 62:8, pp. 408-14.

[58] Ariess, A., 1935. Zur Anwandung des Antidiarrhoikums "Euporistol" Wolfrum; *Münch. Tierärztl. Wchnschr.*, 82:51, pp. 615-17.

[59] Ariess, A., 1935. Die Pododermatitis verrucosa chronrea; (Canker of the Hog). *Berl. Tierärztl. Wchnschr.*, 51:50, p. 799.

[60] Ariess, A., 1935. Zur intravenösen Anwendung des Terpentinöls beim Pferde; (Intravenous Medication of Oil of Turpentine in Equine Therapy). *Tierärztl. Rundsch.*, 41:31, pp. 504-05.

produced by albuminous degeneration and excess accumulation of protein. It is all brought about by dietetic errors.

PREMUNITION IN BRUCELLOSIS

Premunition,[63] that is to say, vaccination with living organisms, until the present time confined to the bovine species, was practiced recently for the first time in brucellosis of ewes and goats. In these species and also in cows it may now be accomplished with vaccines more active and less dangerous than were formerly available.

Brucellosis in ewes, according to Dubois (1931), is manifested by an abortion rate of 30 to 40%. Abortion occurs in rapid succession at the beginning of the outbreak, and then gradually diminishes. The *inaptitude* of infected ewes to abort is naturally acquired, sometimes from one abortion, but more often from two or three. In cows, the *inaptitude* is generally acquired only after three to as many as eight abortions. It can be accomplished more rapidly by vaccinating with living organisms which produce a state of premunition rather than of immunity.

Live culture vaccination was practiced on 4,500 ewes, half of which were pregnant. The remainder had delivered normally, aborted or were sterile. Two methods were used: 3,400 were vaccinated with cultures of *B. abortus suis*, avirulent for ewes and guinea pigs, and 1,100 with a sensitized antibrucella vaccine. The results obtained were satisfactory, offering no inconvenience to the vaccinated ewes, some of which were in the third and fourth month of gestation. The vaccination of ewes before breeding, even in a badly infected flock, almost completely suppressed the abortion, the sterility and the loss of lambs. The use of the same vaccine in the pregnant ewes during the course of the outbreak reduced the number of abortions remarkably and also the incidence of sterility and loss of lambs. The same results were obtained from the sensitized vaccine. The rate of abortion declined gradually, requiring from 12 to 25 days for the vaccination to stop the abortions.

A significant result is that the same vaccination controls the incidence of undulant fever among exposed human beings. In 32 of the infected flocks treated, there had been 36 cases of undulant fever among the attendants, while after vaccination no cases were observed among them during the following 18 months. Live culture vaccination is, therefore, not dangerous for man nor for the ewes, neither does it start new foci of infection, since the vaccine is avirulent for laboratory animals and causes no trouble in pregnant ewes or cows in doses eight to ten times larger than the normal dose.

Vaccination is of no value in pregnant subjects actually affected with Brucella infection. Vaccination of affected animals is simply injecting avirulent organisms where virulent ones are already present. Vaccinating in herds where the infection already exists cannot be charged with causing *new* foci. Moreover, the practical disappearance of the trouble in man where vaccination is employed, acquits it of harmfulness.

There are from 2,000 to 3,000 cases of undulant fever of ovine origin in France annually. The contamination is from animal to man, rarely from man to man. Where several members of a family are affected, the suspected interhuman transmission is usually, upon careful investigation, found to be erroneous, each case being traceable to animal exposure (food or contact). Veterinarians, particularly the younger ones who are exposed by specially dangerous interventions in the course of their work (dystocia, retained placenta) should be vaccinated before practicing in contaminated regions.

Vaccination, comprising three injections at intervals of eight to ten days, is well tolerated and causes no trouble.

The author's conclusions are, that ovine and caprine brucellosis presents economic and public health interest and that preventive premunization is effective in man as well as in animals. Moreover, allergic diagnostic tests are of practical and of incontestible value.

[62] Ariess, A., 1935. Die toxische Herzmuskelerkrankung; (Toxic Myocarditis). *Tierärztl. Rundsch.*, 41:2, pp. 195-96.
[63] Dubois, Dr. Ch., 1935. LaBrucellose. *Recueil de Médecine Vétérinaire*, 111:11, Nov. 1935, pp. 793-820.

RENAL INVOLVEMENT IN CANINE TYPHUS

In canine typhus a fatty degeneration of various sections of the renal tubules is demonstrable[64]; occasionally, anisotrope fat corpuscles may be found. However, these changes are neither constant nor specific. Interstitial inflammation is of such frequent occurrence in the kidneys of dogs, that it is improbable that this condition is the anatomical basis of the severe clinical symptoms of canine typhus. It is assumed that the vacuolar degeneration of the coiled main tubules is perhaps responsible for the severity of the symptoms.

WHOLESOMENESS OF MEAT FROM TUBERCULOUS ANIMALS

In refutation of arguments, Professor Muller [65] states that the more extensive tuberculous lesions in an organ become, the greater the possibility of harm resulting from the ingestion of that particular organ. *Vice versa*, the smaller the tuberculous lesions are in an organ, the less dangerous is the consumption of that particular organ. This is in accordance with the observation that with decreasing numbers of tubercle bacilli, their harmfulness to the alimentary tract decreases proportionally, so that finally the unaltered flesh of slaughtered tuberculous animals becomes practically safe for human consumption. The supposition of blood infection is not the same as actual blood infection. The presence of a blood infection is not the same as a muscle infection. The bacterial infection of the muscle is not the same as harmfulness of the meat. The meat of tuberculous cattle does not become a potential danger, unless immense numbers of tuberculous germs are present in it, and are ingested. But this has never been demonstrated to be the case with flesh from tuberculous animals, free from tuberculous lesions. Such meat is safe for human consumption.

[64] Krispenz, J., 1935. Uber das Vorkommen von Fettsubstanzen in der Niere des Hundes mit besonderer Berücksichtigung der Stuttgarter Hundeseuche. (The Presence of Adipose Substance in the Canine Kidney with Relation to Canine Typhus.) *Wien. Tierärztl. Monatsschr.*, 22:18, pp. 545-53; 22:19, pp.588-96.

[65] Müller, M., 1935. Nochmals: Die Unschädlicksit des Fleisches tuberkulöser Schlachttiere für den Menschen; (The Harmlessness of Meat from Tuberculous Animals for Human Consumption). *Tierärztl. Rundsch.*, 41:40, pp. 643-47.

NEW METHOD FOR PRESERVING MILK

Heine reports [66] a new method for the preservation of milk, cream, buttermilk, etc., in a fresh state. To maintain their fresh flavor in storage, these products are subjected to a certain oxygen-tension within a definite temperature range. According to tests conducted at the Duisburg chemical research laboratory, raw milk and pasteurized milk can be kept strictly fresh for sixty days. The keeping quality of such milk when taken from the storage containers was on an average from two to three days longer than that of ordinary fresh milk. Besides, the milk had acquired an amazingly agreeable flavor. Coffee cream and whipped cream kept their freshness in storage for four weeks. The flavor of cream was considerably improved after two weeks of storage.

SWINE PLAGUE NOT A DISTINCT ENTITY

The clinical picture and the anatomical lesions of swine plague, as defined by Schutz [67] are indistinguishable from hog cholera, and therefore not characteristic for the former disease. *Pasteurella suilla* is found in cases of hog cholera and of hog flu, and is therefore not specific for swine plague. Consequently, it is impossible to make a definite diagnosis of swine plague. On the contrary, *Pasteurella suilla* does not produce a spontaneous disease in hogs at all. For this reason, the occurrence of an acute form of swine plague must be denied. Chronic swine plague is nothing other than a sequel to hog flu, in which *Pasteurella suilla* can be demonstrated in the terminal stages of the disease.

[66] Heine, 1935. Ein neues Verfahren zur Frischerhaltung der Milch; (A New Process for the Preservation of Milk in a Fresh State). *Zeitschr. f. Fleisch. u. Milchhyg.*, 45:20, pp. 381-82.

[67] Günther, 1935. Zur Frage, ob und gegebenenfalls wie eine sichere Diagnose of Schweine seuche möglich ist; (The Problem of Making an Accurate Diagnosis of Swine Plague). *Tierärztl. Rundsch.*, 41:39, pp. 627-31; 41:40, pp. 647-49.

Book Reviews

Topographical Anatomy of the Dog. By O. Charnock Bradley, M.D., D.Sc., F.R.C.V.S., Principal, Royal (Dick) Veterinary College, Edinburgh; Lecturer on Comparative Anatomy, University of Edinburgh, Scotland. Third Edition, 284 pages, 91 illustrations. The MacMillan Company, New York, 1935. $7.75.

The second edition of this splendid work was noted at the time of its appearance (VETERINARY MEDICINE, January, 1928, p. 9). What was said eight years ago of the excellence of the second edition of Topographical Anatomy of the Dog applies even more forcefully to the new third edition. The whole text has been revised, certain parts rewritten and some new material added. Many of the illustrations appearing in the first and second editions have been replaced by new figures and a number of new illustrations added.

The work is indispensable to the study of anatomy of the dog and the information it contains essential to that better type of canine surgery becoming common in our many excellent small animal hospitals. The splendid illustrations, of which there are 91, will almost serve to take the place of dissection, the text matter is clear, remarkably concise, and conveniently arranged for reference.

* * * *

The Practice of Veterinary Medicine. By D. H. Udall, Professor of Veterinary Medicine and Superintendent of the Ambulatory Clinic, New York State Veterinary College, Cornell University, Ithaca, New York. Second edition, 273 pages, 81 illustrations. D. H. Udall, Ithaca, N. Y., 1936. $5.00.

The first edition of this very welcome treatise was noted at the time of its appearance (VETERINARY MEDICINE, April, 1934, pp. 178-79), to which the reader is referred. That a second edition should have been required within the brief period of two years justifies the prediction then made that it would prove a popular work.

In the main, only minor changes have been made in the text of the revision; altogether only six pages have been added. The approach remains distinctly clinical, rather than pathological. The whole literature on the subjects discussed has, of course, been taken into consideration, but even in compilation, which is at a minimum, interpretation is made through the experience of the author and the discussions remain brief, concise and practical. As Doctor Lothe said in his review of the first edition: "It is indeed a 'practice' of veterinary medicine."

The additions to the text consist, in the main, of including developments of research and from clinical observation since the first edition appeared, and in most instances comprise but a sentence or two in the discussion affected. However, the chapter on acetonemia was entirely rewritten and much additional information, obtained in the past three years, included. The same is largely true of the discussion on azoturia, which has been much improved.

The second edition is better bound than the first, printed on better paper and the illustrations are clearer.

* * * *

Dog Encyclopedia, A Complete Reference Work on Dogs, presenting the origin, development, history and standards of all breeds of the world; also all general subjects concerning the care, breeding, kenneling, training and exhibiting of the dog; together with interesting data and lore on the dog throughout the centuries. By Will Judy, editor of Dog World Magazine. 458 pages, profusely illustrated. Judy Publishing Company, Chicago, 1936. $5.00.

This work, although entitled an encyclopedia, is encyclopedic in style only in that the subjects discussed are arranged alphabetically. Had the encyclopedic style been followed in the text, it would have shortened it 50%, or included twice as much information in a text of the same length. The discussions are personal rather than general and range from philosophy to humor, from reminiscences to statistics, from folk lore to physic, from tables of standards to verse.

Dog Encyclopedia is intended for breeders and other owners of dogs. With its adaptability to this purpose, we are not concerned. Veterinarians will find it a convenient reference for a not inconsiderable amount of information which they may desire at one time or another. It con-

tains a discussion of all breeds of dogs, including usually some history of the origin and development; the official standards of all breeds recognized by the AKC and Field, and much information concerning dog shows and showing dogs.

The well-known, friendly attitude of the author to veterinarians and the veterinary profession is evident in many places. A considerable part of the discussion is concerned with diseases of the dog and in many of the severer ailments it is stated that the services of a veterinarian are needed. However, since detailed directions for treatment are given, this advice loses something of its force. In other diseases presenting equal difficulty in recognition and handling, no mention of this need is made. The dog owner will realize it, however, after treating a case according to the directions given, which in few cases are taken from the best source of such information.

While it may be unimportant in the field for which the work is intended, many readers cannot but regret that greater care in diction and in the presentation of facts was not employed. Thus one is told to "sterilize the hands with very hot water;" and in French bulldogs, "heart failure due to difficulty in breathing through the crooked air passages" causes early death; that spaying should not be performed "before the age of seven months;" all bones are covered with "skin known as periosteum;" a toxin is a poisonous subject produced "by the action of that poison;" "The mad dog bite has been one of the greatest errors in the history of all errors;" "The Boston terrier bitch, in many cases, has the pelvic opening of a 12-pound dog and must produce puppies averaging 18 pounds;" calcium gluconate "creates nervous activity;" Mexican hairless are "imported natives;" evacuations may become "thin water" and dogs so afflicted should be kept "in a warm temperature;" food is retained in "the little intestine;" immunity results "when the living virus remains permanently in the tissues;" antidistemper serum should be injected "more preferably between the layers of skin," etc., without end to the last page in the book. Contradictions occur too frequently. The following from adjoining paragraphs is representative of these: "The adult worm [*Dirofilaria immitis*] produces not eggs but living young or larvae. . . . . Fortunately there has been found a treatment which injected into the bloodstream destroys both the worms and their eggs."

* * * *

Abortion, Spontaneous and Induced, Medical and Social Aspects. By Frederick J. Taussig, M.D., F.A.C.S., Professor of Clinical Obstetrics and Clinical Gynecology, Washington University, School of Medicine, St. Louis, Missouri; sponsored by The National Committee on Maternal Health, Inc. 536 pages, illustrated. The C. V. Mosby Company, St. Louis, 1936. $7.50.

Perhaps the motive for writing this work is found in the statement that abortions in this country are, and for 15 years have been, increasing in frequency and at present number about 700,000 annually, as a result of which some 10,000 women lose their lives; and that this needless wreckage of life is a problem of the first magnitude, the chief responsibility for the correction of which lies at the door of the medical profession.

To the veterinarian, easily the most interesting part of this work is a chapter (24 pages) on abortion in animals by Prof. W. L. Williams of Ithaca, New York. The results of Professor Williams' long and intensive study of this subject have been widely published in veterinary literature and are generally known, albeit his conclusions have less acceptance. Whether or not one is prepared to accept Professor Williams' conclusion that abortion in animals is due basically to impairment of the reproductive function due to defects in the ova or spermatozoa, hypoplasia of the reproductive system, parental immaturity, breeding too soon after parturition and malnutrition, no proponent of the infection theory has yet fully met his arguments. He holds that infection, except perhaps venereal infection, is distinctly secondary to the foregoing and brings about its destructive effects only because of lowered intrinsic resistance of the reproductive organs to organisms that under these condi-

tions become pathogenic. Professor Williams' views as to the causes of epizootic abortion run generally parallel to the views held by the medical profession as to abortion in the human and in consequence there is a close agreement between the discussions of the medical author and his veterinary collaborator.

For Professor Williams' views in greater detail and a vast amount of supportive evidence, the reader is referred to VETERINARY MEDICINE, Vol. XXVII, No. 7, July 1932.

The Work is divided into four parts: (1) History and Background; (2) Spontaneous Abortion; (3) Induced Abortion, and (4) Social Aspects of Abortion. The history of abortion, which is given in detail and interestingly presented, is summarized in the statement that "as far back as human records can be traced there is evidence of the desire of the race to maintain some control over the number of the offspring . . . . . the practice is to be found in every corner of the globe at the present time. Almost no tribe is so primitive as not to know some means of bringing on abortions." Recipes for abortifacients dating back 4,600 years are given and many gruesome methods of primitive and not so primitive peoples are described.

Veterinarians will search the section on spontaneous abortion largely in vain for help in handling the problem of abortion in animals. While a large number of widely differing factors contributing to spontaneous abortion are discussed, the author concludes with the statement that when allowance is made for all known factors, more than one-half of such abortions still remain unexplained as to cause. The recognized factors contributing to spontaneous abortions are essentially the same as those so regarded by veterinarians, except that a greater importance is assigned to traumatic influences and to a deficiency of vitamin B; and far less importance is attributed to infection.

Under the discussion of induced abortion, the chapter detailing the experience in the Soviet Union will interest the non-professional reader as well as the physician.

The author concludes the control of abortion, and prevention of the consequent loss of life, lies mainly in better training of medical students, better hospital facilities, improvement in the home and working conditions, changes in the laws governing abortion and contraception, public education, social and economic reform, eugenic sterilization and most of all in "the widespread establishment of clinics for contraceptive advice and provision for the free distribution of contraceptive materials among the poor."

* * * *

Medical Mycology, Fungous Diseases of Men and Other Mammals. By Carroll Wm. Dodge, Ph.D., Mycologist, Missouri Botanical Garden, Professor, Henry Shaw School of Botany, Washington University, St. Louis, Missouri. 900 pages, 142 illustrations. The C. V. Mosby Company, St. Louis, 1935. $10.00.

Veterinarians, whose attention has been largely centered on the pathogenic propensities of higher parasites, protozoa bacteria and viruses will be surprised by this ponderous tome devoted to the molds and the ailments they cause. They will be astonished to note in the bibliography included at the close of chapters, that 4,000 references are given to discussions on the subject that have appeared in medical and veterinary periodicals, reports and monographs. It makes one wonder where one has been when all this happened.

Dodge deals systematically with morphology, physiology, culture, isolation, microscopy and nomenclature of fungi; with the various branches of that large heterogenous group, with keys for their identification down to genera; the diseases they produce; the symptoms, and the treatment. Included in the list is the following fungi either found on domestic animals or pathogenic for them.

Absidia ramose, reported from lesions and mucus of the nose in horses, also ademitis of lower jaw; found in generalized infection in swine, and in cases of abortion in cows.

Absidia Truchisi, isolated from a horse.

Mucor racemosus, from the respiratory tract of birds; also found in the nasal cavity of a sheep, and in a tumor in a horse.

Rhizopus equinus, isolated from a horse, found in generalized infection in swine and in bovine fetal membranes.

Mortierella sp., isolated from a cat.
and cat.

Favotrichophyton coccineum; inoculable to dogs.

Favotrichophyton spadix, inoculable into dog and cat.

Favotrichophyton avellaneum, inoculable into calf.

Favotrichophyton verrucosum, isolated from neck and ears of donkey.

Favotrichophyton fuligineum, inoculable to cat and dog.

Favotrichophyton epilans; lesions on calves very contagious to man and to horse.

Microsporum rubrum, microscopic lesions on horse.

Microsporum equinum, produces tinea tonsurans on horse.

Microsporum marginatum, producing lesions on mule.

Microsporum felineum, inoculable into cat and dog.

Microsporum canis, originally described from the dog where it produces dry, scaly lesions.

Microsporum Audouini, once isolated from a dog.

Achorion gypseum, producing favus with scutula on cat and horse, also a scutiform mass on the comb of a rooster.

Achorion Serisei, isolated from a case of favus on horse.

Achorion gallinae, normally causing favus about the head of the turkey and domestic fowl.

Achorion Schoenleini, inoculable to cat.

Achorion passerinum, producing large scutula on canary.

Achorion caninum, producing favus in dog.

Aspergillus bronchialis, pathogenic to hens and pigeons.

Aspergillus virido-griseus, isolated from the pleuro-pulmonary exudate of goat.

Aspergillus fumigatus, causing severe epizootics in birds.

Aspergillus nidulans, var. *Cesarii*, caused mycetoma in the lung of an ass.

Aspergillus carbonarius seu ater, isolated from a case of diphtheria in a dog.

Actinomyces musculorum, seen in calcareous deposits in the muscles of swine.

Actinomyces necrophorus, isolated from calf diphtheria.

Actinomyces actinoides, isolated during a mild epidemic of pneumonia in calves.

Actinomyces viridis, found pathogenic to cat.

Actinomyces tossicus, isolated from tumors in the abdominal cavities of domestic fowl, pathogenic to chickens.

Actinomyces dermatonomus, isolated from lesions on sheep.

Actinomyces pyogenes, found pathogenic to dog.

Actinomyces Garteni, pathogenic to pigeons.

Actinomyces minimus, isolated from ringworm of horse and dog.

Actinomyces bovis, the common cause of lumpy jaw in cattle.

Actinomyces Lanfranchii, isolated from glandular and ganglionar actinomycoses of ox.

Actinomyces Chalmersi, isolated from saliva of horse.

Actinomyces plurichromogenus, isolated from the blood of a horse.

Actinomyces Freeri, pathogenic to dogs.

Actinomyces farcinicus, found in farcy of oxen, pathogenic for sheep, not very pathogenic for goat, dog, cat, horse or ass.

Actinomyces canis.

Actinomyces caprae, found in the lungs of a goat.

Trichosporum equinum, producing white nodules on hair of horse, becoming yellowish or darker.

Zymonema farciminosum, producing epizootic lymphangitis of horse, mule and rarely of ass.

Castellania Mirandei, differs from *Zymonema farciminosum* in specifity for ass.

Endomyces sp., isolated from pleuropulmonitis in a horse.

Saccharomyces tumefaciens, pathogenic for dog.

Saccharomyces pseudotubercolaris, isolated from pseudotubercular lesions resembling sarcoma in the abdominal cavity of fowl.

Cryptococcus lithogenes, isolated from the lymphatic ganglia of an ox which died of generalized carcinoma.

Cryptococcus nasalis, isolated from nasal tumor in horse.

Cryptococcus Kleini, isolated from milk, pathogenic for dog.

Cryptococcus histolyticus, isolated from the lung of a horse.

Cryptococcus granulomatogenes, isolated from granuloma of lung of swine.

Atelosaccharomyces Gottii, isolated from lesions in the nasal passages of a horse.

Torulopsis Sangiorgii, isolated from the peripheral bloodstream and from the liver of a dog after five months of fever, pathogenic for dog.

Gymnoascus setosus, isolated from skin lesions of a dog.

Gymnoascus gypseus, producing favus in man, dog, cat and fowl.

Ectotrichophyton granulosum, producing an epizootic in horses.

Ectotrichophyton mentagrophytes, found on the horse.

Megatrichophyton caninum, causes folliculitis depilans in dog.

Megatrichophyton equinum, isolated from lesions on horse.

Megatrichophyton roseum, infects the head of fowl.

Favotrichophyton discoides, inoculable to donkey.

Favotrichophyton album, lesions strictly endothrix in calf; ectoendothrix when inoculated into cow.

Favotrichophyton singulare, from lesions on cows.

Favotrichophyton camerounense, isolated from lesions on a bull.

Favotrichophyton Langeroni, producing crusts in circular lesions on dromedary.

Favotrichophyton floreale, isolated from lesions on bull.

Favotrichophyton ceroton, produces lesions with greyish crusts on bulls.

Favotrichophyton cinereum, isolated from cattle.

Favotrichophyton expansum, produced isolated lesions, covered with a thick crust of grey scales on bulls.

Favotrichophyton coronatum, produced lesions on back of cattle.

Favotrichophyton pruinosum, isolated from a sheep, inoculable to calf.

Favotrichophyton conicum, isolated from a horse.

Favotrichophyton caballinum, epizootic on horses; lesions five to six cubic centimeters in diameter, soon confluent, covered with dry crusts, with vesicopustules under the scales.

Favotrichophyton violaceum; inoculable on dog

Actinomyces bicolor, found in cerebromeningitis, bronchitis and lymphadenitis in dog; horse, calf and birds infected with difficulty.

Actinomyces Spitzi, found in mycosis of the upper jaw in oxen; pathogenic to oxen and sheep; less so to horse and pig.

Actinomyces valvulae, found in endocarditis of cattle.

Actinomyces equi, found in nodule on jaw of horse.

Actinomyces cameli, found in pseudotuberculous lesions of lungs, ganglia and kidneys of a camel.

Actinomyces cati.

Alcurisma Vuillemini, from lesions in dog.

Sporotrichum equi, epizootic on horses.

Haplographium De Bella-Marengoi, var, *equinum.*

Fusarium Moronei, from skin lesions of a dog.

Fusarium equinum, ringworm of the horse.

It is useful work for the veterinarian's library.

VETERINARY MEDICINE IN JAPAN

From the utilitarian point of view, the quality of veterinary education is subordinate to the place and status provided for those it qualifies.

The number of veterinarians in Japan is extremely high compared with the domestic animal population. Already in 1900, there were 4,248 practitioners and these have been increased gradually in accordance with needs. The chief of the livestock sanitary service is a veterinarian ranking as major general. The directors of animal husbandry and the stallion depots also are veterinarians. Japan maintains two veterinary schools for the civil service and a veterinary military academy. Baccalaureate degrees are conferred upon the graduates of veterinary colleges, and doctorate degrees to those who make important contributions to the science. The head of the veterinary corps of the army is a colonel and under him are four majors, 20 captains, and 33 lieutenants for each army corps. Others are attached to the remount service, the military academy and the school of horseshoeing. To supply replacements 20 students are admitted annually into the academy. Professors Muto and Nitta, prominent figures in the world veterinary circles, have, since 1921, published the *Journal of the Japanese Society of Veterinary Science.* Its articles, in Japanese, are summarized in German, English and French. The *Japanese Journal of Experimental Medicine,* founded in 1922, is a journal of high scientific character devoted to infectious diseases and documentations on the direction of the national sanitary service. Its management is under Professor Miyagawa of the University of Tokio. For the new régime of Manchukuo where domestic animals (cattle, horses, swine) are abundant, an elaborate sanitary service has been established, comprising experiment stations and vaccine laboratories.

Analysis of the present Japanese service reveals a high quality of education and, what is most significant, it provides a place and definite status for those who qualify.

Report of Finance Committee Twelfth International Veterinary Congress

New York, N. Y., April 15, 1936

A meeting of the Finance Committee appointed at the closing meeting of the Twelfth International Veterinary Congress for the purpose of closing the accounts and issuing a statement in connection therewith was held at the Rockefeller Plaza, New York City, on the afternoon of April 15, 1936. There were present Dr. R. S. MacKellar (in the chair), Dr. Adolph Eichhorn and Dr. C. J. Marshall, members, and Dr. John R. Mohler and Col. O. E. McKim, invited guests.

The Treasurer submitted a statement of the receipts and expenditures of the Congress, which had been audited by Stuart Heitmuller, Public Accountant and Auditor of Washington, D. C. This statement and the auditor's report were examined, approved and ordered to be published in accordance with the statutes of the Congress. The question of the disposal of the balance left in this fund was deferred for consideration at the evening meeting of the Committee.

The Treasurer's letter of April 14, and the Auditor's certified statement of the receipts and expenditures follow:

Gentlemen:

I respectfully present herewith the report of the Treasurer of the Twelfth International Veterinary Congress, held in New York, August 13-18, 1934. In this connection the by-laws state that the accounts of the Congress must be closed "not later than two years after the final meeting." Such action might have been accomplished several months earlier, but it was retarded on account of the delay in obtaining from the Government Printing Office the last bill for reprints of papers presented at the Congress, which bill was received only a few days ago.

Attention is also called to the by-laws which specify that the revenues of each Congress shall consist of:

(a) Subscriptions of Members.

(b) Voluntary contributions, etc.

Although the latter (b) are not subject to the statutes of the by-laws "unless the donors have made the contrary a condition of their gifts" (which condition was not requested by any donor), nevertheless it is recommended that the attached balance sheet which contains a statement of receipts and expenses in full, be furnished for publication in the veterinary journals of those countries having the largest number of members of the Twelfth International Veterinary Congress.

As you will note, the Treasurer's Report shows that the Budget has been balanced and a respectable surplus attained for further use in advancing the outposts of our profession.

You will further note the receipts from membership dues, the only funds over which the by-laws have specific jurisdiction, were insufficient to meet the demands of the Congress *per se*, but fortunately the various contributions, combined with the Government printing appropriation, were sufficient not only to make up the deficit, but also to leave the respectable balance reported.

Respectfully submitted,

J. R. MOHLER, Treasurer.

Inclosure.

Twelfth International Veterinary Congress
Receipts and Expenditures
May 28, 1931 to April 13, 1936

CASH RECEIPTS

Membership fees (including ladies and students)	$17,279.51
Veterinary Associations	12,445.60
Honor Roll Contributions	2,800.00
Other Contributions	5,919.64
Sale of Proceedings	405.29
Sale of Reprints	257.53
Alumni and General Banquets	2,855.50
Commercial Exhibits	4,289.50
Interest on Bank Deposits	.95
TOTAL RECEIPTS	*$45,253.52

* Note: An additional $11,000 was appropriated and spent by the United States Government for setting type, general proof reading, corrections, engravings, and printing and binding of a sufficient number of copies of the Proceedings for free distribution to various libraries and other depositories approved by the Congress of the United States. This fund was handled directly by the fiscal agents of the Government.

CASH EXPENDITURES

Organizing Committee expense	$ 1,335.74
Local Arrangements Committee expense	426.14
Publicity Committee expense	250.04
Expenses to Permanent Committee Meeting in Paris	300.00
Donation to Permanent Committee Administration	1,000.00
Membership Badges	653.40
General Secretary's Office expense, Chicago, Ill.	955.39
General Secretary's Office expense to, from and in New York City	608.99
Assistant to the General Secretary (Mr. Haux)	2,376.00
Official Photographer	151.00
Advertising Expenses	537.26
Postage, United States and Canada on circular letters	139.52
Job Printing and Stationery	1,305.59

Protested and Returned Checks	285.00
Bank Charges	8.75
Public Accountants Fee	50.00
Post Congress Clinic	375.08
Translating, Interpreting and Editing	984.57
Printing of Proceedings	9,458.21
Printing of Reprints	920.53
Decorations of Commercial Exhibits	420.00
Waldorf-Astoria for Receptions, Banquets and Incidentals	8,362.13
Music, Entertainment and Incidentals at Receptions, Luncheons and Banquets	1,766.25
Boat Excursions, Playland, New York Harbor, etc.	600.00
Ladies' and Children's Entertainment	1,287.00
Motor Transportation to West Point, Playland, Princeton and points of interest	1,562.69
Total Expenditures	$36,119.68
Excess of Cash Receipts over Expenditures	$10,133.84

I certify that the above is a true and complete statement of the cash receipts and cash expenditures as submitted of the Twelfth International Veterinary Congress for the period of May 28, 1931, to and including April 13, 1936.

(Signed) Stuart P. Heitmuller
Accountant and Auditor

April 14, 1936.

SECOND MEETING

The Committee on Finance of the 12th International Veterinary Congress, met again on the evening of April 15th at the Waldorf-Astoria, New York City, after having previously examined the financial, audited report of Dr. John R. Mohler, Treasurer of the Congress, and approving the same.

The Committee at this time deemed it advisable to consider the utilization of the unexpended balance and after full discussion, has unanimously decided to allocate the same for the following purposes:

1. A $5,000 endowment to be created and placed in the custody of the Treasurer of the American Veterinary Medical Association, the annual income of which is to be awarded as the Twelfth International Veterinary Congress Prize to a member of the A. V. M. A. for the most noteworthy contribution to the advancement of veterinary science during the preceding year. This cash Prize is to be awarded only to veterinarians and presented at the annual meeting of the A. V. M. A. beginning 1937, but is not to be given more than once to any recipient. The body to make the annual award shall consist of a special committee of five constituted as follows: President of the A. V. M. A., Chairman of Executive Board, Chief of the Bureau of Animal Industry, and Chief of Veterinary Division of Surgeon General's Office, U. S. Army, these four members to select the fifth member who shall not succeed himself.

2. A $3,000 endowment to be created and placed in the custody of the Treasurer of the A. V. M. A., the income during the intervals of the International Veterinary Congresses to accumulate and the accumulated sum to be awarded as a cash Prize, to be known as the U. S. A. Twelfth International Veterinary Congress Prize, at each International Veterinary Congress for the most noteworthy contribution by a veterinarian in the advancement of veterinary science since the last preceding Congress. The members of the Permanent Committee should constitute the body to award this Prize. At the meeting at which the program for the forthcoming International Veterinary Congress is considered, proposals for the candidates of the Prize should be made and, at a meeting during the Congress, the Permanent Committee should decide on the winner and the President make the presentation at the closing session of Congress.

3. The balance of the surplus should be utilized as follows:

Dr. Mohler, who extended the official invitation to the Congress at the 11th International Veterinary Congress at London, to receive $511 as part of his personal expenses incurred on that trip.

An appropriation of $400 to be made towards the expenses of a Permanent Committee member from the United States to attend the meeting of the Permanent Committee in Paris in 1937. At this meeting, the program for the 13th Congress is to be considered. Should the President of the 12th International Congress not be in a position to attend, he should be given the privilege to name an alternate to attend said meeting.

An appropriation of $400 to be made to each of the three members of the Permanent Committee from the United States to attend the International Veterinary Congress at Berne, Switzerland, in 1938. Should one or more of the members of the Permanent Committee not be in a position to attend, they should have the privilege of naming alternates.

The remaining $22.84 to be used to defray as far as possible the expenses of the members of the Finance Committee in attendance at the final meeting when the business of the Twelfth International Veterinary Congress was brought to a close.

The Committee wishes to express their appreciation for the efficient, painstaking and very laborious work of the Treasurer of the Congress, Dr. John R. Mohler, who not only aided materially towards the scientific success of the Congress, but also put forth arduous efforts in collecting a considerable proportion of the funds.

(Signed) R. S. MacKellar, Chairman,
C. J. Marshall,
Adolph Eichhorn, Secretary.

IMPORTANCE OF MILK IN RICKETS PREVENTION

Nature originally provided the means of automatically taking care of our vitamin D requirements through the action, on the skin, of the ultraviolet rays of sunlight. So long as people live in tropical regions, where the rays of the sun are direct and plentiful throughout the year, protection continues to be automatic. For example, of the hundreds of Porto Rican infants and children examined by Eliot and Jackson, the only one showing frank, severe rickets was a seven-month old infant, who had lived all of its life in a stone cellar. Three other infants showed roentgenographic evidence that could be interpreted as very slight or slight rickets. Together these cases represented less than one per cent of the total number of infants examined.

However, as the distance from the tropics increases the protection afforded by sunlight becomes less automatic because the rays of the sun become more and more oblique and therefore have to penetrate a greater amount of atmosphere before they reach the earth's surface. As a result of this, much of the ultraviolet radiation is filtered out and its effectiveness is lost.

During the development of the human race, its dissemination over the globe has been accompanied by a more or less successful adaptation to the change in environment.

For example, it has been suggested that the blond types of Northern Europe resulted from natural selection since, in these northern latitudes, the more darkly pigmented individuals suffered more from rickets, which in its severe form resulted in deformities of the female pelvis that made subsequent childbirth difficult or impossible. On the other hand, those with lighter skins were better able to absorb the meager ultraviolet radiations and thus obtained the protection against rickets, necessary to their normal reproduction and survival.

Farther north within the Arctic Circle a different form of adaptation is found. There, a dark-skinned race, forced by a rigorous climate to bundle itself in furs, has compensated for its inability to obtain protection through sunlight, by utilizing an automatic food source rich in vitamin D. For centuries their diet has consisted of fish and marine animals that subsist largely on fish. Not only are the Eskimos free from rickets so long as they remain on their native diet, but they are noted for their fine teeth and their freedom from tooth decay.

While, in this country, we do not have to meet the extreme conditions with which the Eskimos have to contend, the United States lies largely within the zone where sunlight cannot be depended upon for automatic protection. Moreover, of the foods that have been commonly included in the average American diet, none contains an adequate amount of vitamin D and obviously the food of the Eskimos does not appeal to our refined appetites and probably could not be obtained in sufficient abundance even if it did.

Our need to supplement sunlight in some way, in order to satisfy our vitamin D requirements, has been accentuated by modern industrial civilization, which has brought a long list of light-stealing factors, including smoke and dust, narrow city streets and tall buildings, and too much time spent indoors in schools, offices and factories. However, while industrial civilization has increased the need for a food source of vitamin D that can be depended upon to supplement sunlight, it has also provided a practical and economical way to meet this need by enriching milk with vitamin D.

* * * *

FOR DISTINGUISHED SERVICE TO AMERICAN DOGDOM

Announcement has been made by the Chappel Foundation at Rockford, Illinois, that the third Chappel Award for Distinguished Service to American Dogdom will be presented the early part of 1937, possibly at the time of the Westminster Show, to the outstanding figure in the dog world during 1936. Nominations for the Award may be made till November 15th, 1936. The final selection of the recipient of the beautiful bronze plaque will be made by a group of five judges.

The two previous awards of this foundation were presented to Mr. George F. Foley and Mr. James W. Spring. Both of these men have done much to further the best interests of the dog in America, and their choice was gratifying to all the dog fancy. Nominations for the 1936 award should be sent to the Chappel Foundation, Rockford, Illinois.

* * * *

THE GAME INDUSTRY

Six million hunting licenses, for which sportsmen paid nine million dollars, were issued in the United States including Alaska, in 1934. There are approximately seven million holders of fishing licenses, and in addition, there are millions more both of hunters and fishers who do not require or do not take out licenses. More than five million automobiles were used for hunting, fishing and trapping expeditions and during the year were driven an average of 700 miles per car. Figuring 40,000 miles as the average life of a car, a total of 87,000 cars per year are manufactured for these sports alone, 908,000 tires are used and 40 million dollars spent for oil and gasoline, to say nothing of the cost of boats, hunting lodges, hotel bills, special clothes, cameras, camera supplies (25 million dollars), binoculars, guns, ammunition and fishing tackle. In the aggregate, it amounts to hundreds of millions of dollars annually.

U.S.D.A. EXHIBITS AT A.M.A. MEETING

The United States Department of Agriculture exhibit at the current (May 11-15) meeting of the American Medical Association in Kansas City features a number of matters of veterinary as well as medical interest including: The part played by several flies in causing myiasis. Maggots of several species of flies—entering the body with food or drink—remain in the intestinal tract, causing severe abdominal pains, nausea, and headaches. The most common producers of intestinal myiasis are flesh flies, the rat-tailed maggot, the little house fly, and the latrine fly.

Where abundant, the nose bot fly—normally parasitic in the head sinuses of sheep and goats—sometimes injures, or even blinds, people it happens to fly against. It deposits its maggots in the nose of its victims.

In the North, Northwest, and East, children sometimes are infested with larvae of parasitic flies, which burrow into the skin, producing boil-like eruptions. Recovery is rapid with the removal of the maggots, unless a secondary infection develops.

Small first-stage larvae of horse bot flies cause a peculiar form of dermatitis in man, seemingly most common in the north central states. Reddish, sinuous wheals, about ⅛ inch wide—the mark of larval movement beneath the skin usually appear on the forearms. Physicians cut out these larvae or kill them by freezing a small area of the skin with ethylene chloride or carbon dioxide "snow."

Larvae of ox warble flies occasionally attack man. Before breaking the skin, these larvae often move about through the body, with the accompaniment of paralytic and other grave symptoms.

Man is subject to attack also by screw worms—the larvae of the parasitic blowfly that is a serious livestock pest in the South.

Following the use of maggots in the treatment of chronic osteomylitis, the method by which they produce their remarkable healing effects has been studied. It was found that the maggots excrete allantoin, a powerful healing agent.

The exhibit will describe this substance which has much the same healing effect as the maggots and is now substituted for the maggots themselves. At first isolated from maggot excretions, allantoin is now produced chemically from other sources.

Some of the results of putting molds to work to make various chemicals and the way it is done form part of the Department's display. By the action of molds, corn sugar has been made to yield four substances used in medicine or in physiological research—calcium gluconate, kojic acid, calcium dilactate, and citric acid. Effective manufacturing methods developed by department chemists several years ago are now used by the industry. These improved methods are largely responsible for reducing the price of calcium gluconate—extensively used in calcium therapy—from $150 to 50 cents a pound.

How to determine the presence of selenium in soils and vegetation and the effect of seleniferous vegetation on animals are shown in another exhibit.

The exhibit also includes samples of citrus fruit juices, apple concentrate, concentrated grapefruit juice, and apple, date, and pear sirups made by a process that insures indefinite retention of fresh flavors and nutritive properties.

PEORIA MID-SUMMER CLINIC

The fourth annual clinic of the Mississippi Valley Veterinary Medical Association will be held at Williams Sale & Commission Company, 2220-36 South Washington St., Peoria, Illinois, Thursday, June 4, 1936. For full particulars write Dr. L. A. Gray, secretary, Bushnell, Ill.

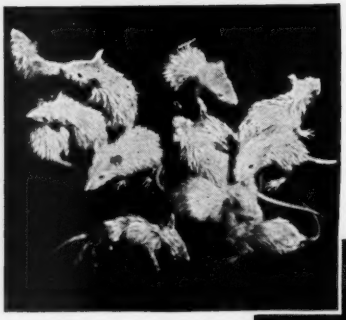
Milk is most universally consumed by infants and children at a time when they have the greatest need for bone-building material. The fact that milk is rich in calcium and phosphorus, and the further fact that vitamin D is required for the proper utilization of these minerals, make milk, because of its universal use, the logical vehicle for supplying vitamin D automatically when and where it is most needed. No other food presents the same opportunity or qualifies for the task in so many particulars.

That there is a fundamental need for an automatic food source of vitamin D does not seem to be open to question, when the problem is considered in its entirety. Public health presents a problem that is distinct from personal health. To those who are able to avail themselves of the known value of cod liver oil and viosterol there should be added the many who will be benefitted by a source of vitamin D which requires little or no volition or vigilance for its administration. Vitamin D milk promises to fill this need.—*Vitamin D Milk.*

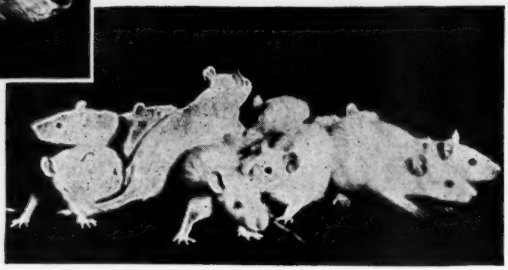
Many veterinarians dispense, while others feel that they can best serve their clients by making a diagnosis and recommending proper treatment. No one can dispute the fact that thousands of dollars are lost each year by livestock raisers who attempt to treat their animals without knowing what disease they are attempting to control. Much of this loss could be avoided by competent veterinary advice.

With these things in mind it is our suggestion that pharmacists, particularly those in rural communities, start a "Know Your Veterinarian" campaign. Make it a point to have a talk with your local veterinarians. Find out what you can do to cooperate with them. If we can further your efforts in any way, please be sure to write us.—*The Merck Report.*

LOOK AT THESE PICTURES!



Amazing difference in Dog Foods shown by tests



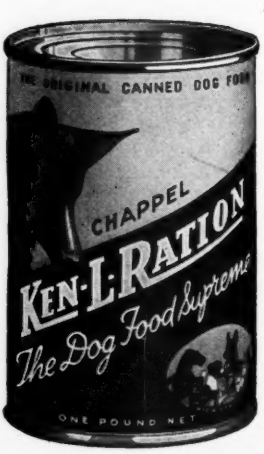
ABOVE—Before Ken-L-Ration was fed!

AT RIGHT—The same litter 15 days later after Ken-L-Ration was fed.

● **The litter in the photograph at the top was 23 days old when this picture was taken. Their parents had been reared from birth on a well-known brand of canned dog food. This litter, as the picture shows, was far below normal—suffering from the need of real nourishment.**

Now look at the other picture! It is the same litter after the pups had been fed exclusively on Ken-L-Ration for 15 days. Note the strong, healthy bodies, clear eyes and smooth coats, which indicate the excellent recovery made when Ken-L-Ration was used to replace the other foods.

These rat studies have real meaning. Here is definite PROOF of the ability of Ken-L Ration to nourish the animal body.



Write for two new illustrated booklets giving new facts about biologic value of dog foods.

CHAPPEL BROS. Inc.

503 Peoples Avenue Rockford, Illinois

10 grs. available iodine per capsule

FOR ACTINOMYCOSIS

Botryomycosis, chronic suppurative conditions, thyroid and other glandular disturbances; corneal opacity, ascites, diabetes insipidus, purpura hemorrhagica . . . all conditions where quickly assimilable iodides are needed.

QUICKLY PRODUCES DESIRED IODISM

Iodine entirely set free in contact with the alkaline intestinal secretions.

DOES NOT CAUSE GASTRIC DISTURBANCES

DOSE: One capsule two or three times daily, in drinking water, or mixed with food, or placed in pith of ear of corn.

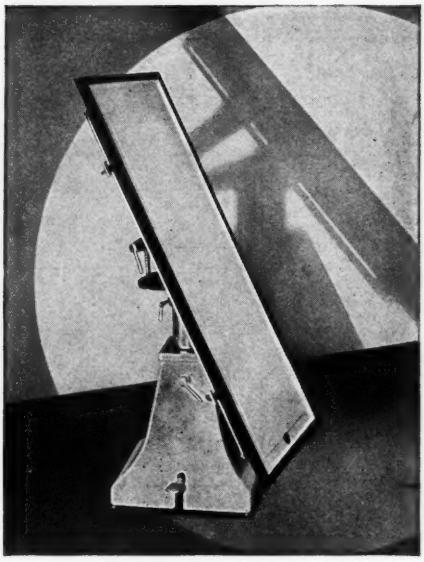
100 caps. (10 gr.).....$3.75

For Small Animals

NORGIDINE 1 gr. capsules, 100.....$1.25

PLEASE ORDER BY MAIL

NORDEN LABORATORIES
The Mark of Quality
LINCOLN · NEBRASKA



STRASCO Hydraulic
SMALL ANIMAL TABLE
Priced at ***$87.50***
R. J. STRASENBURGH CO., ROCHESTER, N. Y.
Manufacturers of TONAMINE

Twenty-four veterinarians from 12 counties attended the monthly meeting of the Cedar Valley Veterinary Association, April 13th. The speakers included R. M. Hofferd, Iva Dunn, R. D. Wall, H. A. Seidell, C. E. Juhl, C. C. Franks and L. F. Bacon.

MECHANICSVILLE CLINIC JUNE 17th

The various sections in which the Eastern Iowa Veterinary Association's summer clinic at Mechanicsville, June 17, 1936, has been placed in charge of the following:

Equine section—Iva Dunn, Atkins.

Bovine section—V. B. Vanderloo, Dubuque.

Swine section—R. M. Hofferd, Cedar Rapids.

Ovine section—W. L. Andrews, Milton.

Pet animal section—E. R. Kennedy, Moline, Ill.

Poultry section—R. E. Elson, Vinton.

Laboratory and diagnostic section—Frank Breed, Lincoln, Nebr.

Handy devices section for display: Mr. Guy F. Hershey, Cedar Rapids.

The Committee hopes through the cooperation of interested veterinarians in Eastern Iowa and Western Illinois, a series of demonstrations valuable and instructive to all present may be staged and that veterinarians will arrange to attend and bring with them suitable clinic material.

Trade **AZAMINE** Mark

a Valuable Aid in the Treatment of

Metritis — Septicemia

Urinary Tract Infections

Coccidiosis — Wounds

Gastro-Intestinal Infections

●

Reprints of Published Reports and Descriptive Literature Sent on Request.

●

Rare Chemicals Inc.

Manufacturing Chemists

NEPERA PARK NEW YORK

For Better . . . Faster . . . Easier Dog Clipping

The NEW STEWART CLIPMASTER

78% MORE POWERFUL

Veterinarians who have tested the new Clipmaster say it is the finest, fastest, easiest to use dog clipper of all time.

Clipmaster has powerful, air-cooled, ball bearing motor inside the special composition handle. Perfect balance for clipping in any position.

WHAT USERS SAY

"Got a compliment on every dog I clipped with Clipmaster."
"Paid for itself the first week I had it."
"Clipped 73 dogs without resharpening."
"Gave excellent service on 300 dogs last summer."

Clipmaster complete with 20 feet of cord, for use on any 110-volt A. C. or D. C., only $16.95. For other voltages $18.95. (Slightly higher West of Denver.) At your dealer's or send us $2.00. Pay balance on arrival. Write for catalog showing complete line of STEWART clipping and shearing machines. Made and guaranteed by Chicago Flexible Shaft Co., 5516 Roosevelt Road, Chicago, Illinois.

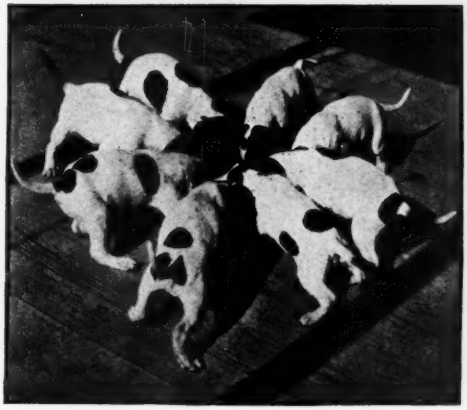
46 YEARS MAKING QUALITY PRODUCTS.

DIET AND PHYSICAL EFFICIENCY

In his concluding lecture, Sir Robert McCarrison had many useful things to say on the paramount importance of food in the prevention of disease. He began by showing a diagram prepared from the material provided by the annual report of the Chief Medical Officer of the Ministry of Health for 1933, wherein it was shown that diseases of the respiratory and of the digestive system accounted for more than one-third of all illness in the insured population of England and Wales. A similar diagram prepared from the report for the same year of the Surgeon-General of the Madras Administration, after making certain adjustments for purely tropical ailments, showed that these two systems of the body again accounted for approximately one-third of all sickness among persons of the hospital class. If these two classes of disease were, as they have proved to be, a chief consequence of feeding rats on a diet in common use by the poorer classes in the United Kingdom and also in common use by the poorer class Madrassi, then these diets *per se* were likely to be favorable to the production of such maladies in human beings.

The relative incidence of certain diseases in Madras and in the Punjab was illuminating, bearing in mind that the diet of the poorer classes in this country afforded as little protection against disease as that of the Madrassis, and that the diet

A DOG FOOD *for* Skeptical Veterinarians



Gaines Dog Food has been developed, specifically, to earn the respect of the veterinary profession — to meet *your* standards.

You told us of the difficulty of digesting cereals and vegetables—hence we added Starch-Splitting Enzymes.

You pointed out how Cod Liver Oil rapidly lost its vitamine potency—so we exploded the oil into tiny globules and coated these with a milk lactose powder.

You insisted upon eggs and skim milk . . . upon better meat—and they're in the Food.

You asked for Proof of Adequacy—and we furnished it through a series of biological tests on rats—*and on four successive generations of dogs.*

Naturally, this new type Food has become popular with veterinarians. Many of them find it a very profitable side-line.

We'd like your opinion of the Food. Discard all previous ideas of a commercial ration—and try Gaines Food entirely at our risk. Be the sole judge and jury of whether it IS a Food you can use to advantage and can recommend conscientiously.

GAINES MEAT AND MILK MEAL COOKED

The Granular Food

GAINES KRUNCHON MEAT & MILK MEAL IN PRESSED FORM

Hardened Pellets

FREE. **Send a Post Card for Professional Samples. Moreover, to ONE in each community, we'd like to send details of our Veterinary-Dealer proposition.**

GAINES FOOD CO.

BOX D-3 SHERBURNE, N. Y.

GAINES FOOD CO.
Sherburne, New York

☐ Send me professional samples of both Gaines Meat & Milk Meal and Gaines Krunchon.

☐ I am interested in your dealer's proposition.

Name .....

Address .....

FISTONE

● Foremost for a quarter of a century in the minds of those who have made a study of scientific control of many types of animal diseases.

Fistone is the original internal treatment for fistula of the withers, poll evil, quittor and other suppurative and catarrhal conditions.

Used by leading veterinarians the world over.

THE FISTONE AND APPLIANCE COMPANY
College Corner, Ohio.
Trial Order—One doz. boxes (once only).$ 8.00
Regular Price—One doz. boxes..... 10.00
One-half doz. boxes..... 5.00

Dr.....

Address.....

of the people of the Punjab was, in general, of better constitution than either. Tuberculosis was nearly twice as common in Madras as in the Punjab; leprosy was also much more common. Diseases of the chronic and degenerative kind were found more frequently in the south than in the north of India. Peptic ulcer was nearly 60 times more common, rheumatism nearly five times as common, cancer three and a half times as common, anaemia and malnutritional diseases generally (excluding beri-beri, which rarely occurred in the Punjab) more than twice as common, rickets four times as common. These and other like differences in the incidence of disease as between the two parts of India, could be accounted for in large part by the difference in the nutritive quality of the diet of the peoples.

Returning to the seriousness of partial degrees of vitamin insufficiency, on which he had dwelt in his second lecture, the lecturer stressed the consequence of inadequate ingestion of vitamin B_1, which appeared to him to be a conspicuous fault of the diet of the British people. The fault was due to the extensive use of vitamin-poor wheat flour and the inordinate use of vitaminless sugar. The excessive richness of the average diet in the two carbohydrates gave rise to insufficiency of vitamin B_1, for two reasons: first, because the food as a whole did not contain enough of it, and, secondly, because relative to the richness of the

Specific Against . . .

HEARTWORM INFESTATION of Dogs

(*Dicrofilaria Immitis*)

■

FUADIN

Reg. U. S. Pat. Off.
Brand of Stibophen

EFFECTIVE new antimony compound with a scientific and clinical background. Best employed intramuscularly. Does not cause sloughing or abscess formation. Also used intravenously with excellent results, particularly in large dogs.

Supplied in convenient diaphragm stoppered bottles containing 25 cc. of Fuadin Solution

Informative literature and prices on request.

WINTHROP CHEMICAL COMPANY, INC.
170 VARICK STREET NEW YORK CITY

Factories:
Rensselaer, N. Y.—Windsor, Ont.

BALORATION

is now known as

TI-O-GA

DOG & PUPPY FOODS

The name is changed. The food remains the same.

Since the acquisition of the business of the Jem Animal Food Corporation, Tioga Mills, Inc. have compounded this ration exactly as before. Mr. Leon F. Whitney, under whose direction Baloration was developed, will continue to supervise the formulation of TI-O-GA Dog Food, and to carry on independent biological research in its behalf.

EXPERIENCED FEED SPECIALISTS

For 28 years Tioga Mills, Inc. have specialized solely in compounding animal feeds. We have no by-products to dispose of. Selection and proportioning of ingredients are governed purely by the nutritional requirements of the dog.

The Tioga Plant is a large, clean, modern establishment with extensive facilities for processing, blending and controlling uniformity of quality in animal feeds. The company is firmly established, experienced and enjoys a good reputation in other feeding fields. It is organized to render prompt, efficient service. It is proud of its reputation and desires to see its own name applied to all its products.

To veterinarians interested in any technical information concerning TI-O-GA Dog Foods — ingredients, processes, nutritional values, biological data, growth charts, generation tests, nutrition of nursing dams, puppies, etc. — we shall gladly furnish data from our records.

BALORATIONS, INC.

Division of

TIOGA MILLS, INC.

DEPT. M-57 WAVERLY, N. Y.

PRACTICAL EVERYDAY CHEMISTRY

contains hundreds of practical formulae for soaps, cosmetics, ink, antiseptics, disinfectants, paints, paper, food, adhesives, abrasives, beverages, polishes, alloys and countless other products; more than 300 pages, 3½x8½ inches. "A valuable, up-to-date work for folks who want to know how things are made."—L. G. COPES, *Research Chemist.*

Price $2.00

VERERINARY MAGAZINE CORPORATION

75 East Wacker Drive **Chicago**

Patton Biological Laboratories

Formulas - Consultation

Biological Testing

"Dog, Cat, Fox Food Exclusively"

Address all correspondence to

DR. J. W. PATTON

P. O. Box 933 **E. Lansing, Mich.**

diet in carbohydrates, this vitamin was rendered still more deficient for it was now known that the greater the consumption of carbohydrates, the greater the need for vitamin B_1. He quoted from Dr. G. E. Friend, medical officer, Christ's Hospital, Horsham, that the "deficiency of white bread in vitamin B is one of the most serious dietary deficiencies to which our population are being subjected at the present time," and to this the lecturer added that the inordinate use of refined sugar was one of the most serious addictions of the day. In America it has been recognised that the "bread-meat-potato-sugar" diet—and the average diet in this country was of the same order—was dangerously low in this important factor unless it was supplemented with a sufficiency of milk, eggs, fruits, nuts and vegetables. Many experiments had been made during the last few years among American children which showed the

Hotel Cecil

Where a Warm Welcome* and GOOD SOLID COMFORT *are always waiting for you

700 ROOMS

$1.00 to $2.00 single
$1.50 to $3.00 double

COFFEE SHOP FEATURES
WONDERFUL FOOD

Los Angeles

PARK YOUR CAR AT HOTEL REAR ENTRANCE

SEVENTH & MAIN STREETS

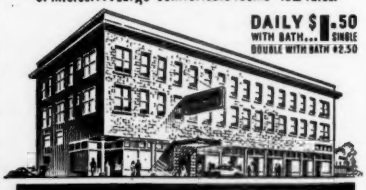
A Friendly Place to Live

HOTEL

CHALMETTE

You really enjoy the true spirit of New Orleans when you stop at Hotel Chalmette, just a few blocks from historic Canal Street and within easy reach of all points of interest... Large comfortable rooms - low rates.

DAILY $1.50 WITH BATH... SINGLE DOUBLE WITH BATH $2.50



NEW ORLEANS

A PRACTICAL ANSWER

to the question

"What shall I feed my dog?"

CONTENTS:

55% Beef Meat Food Products (dry weight basis) . . . Wheat . . . Barley . . . Tomatoes . . . Dry Skim Milk . . . Edible Bone . . . Common Salt . . . Cod Liver Oil.

Here is a thoroughly reliable feeding formula for dogs, one that veterinarians and breeders can recommend with perfect confidence to dog owners.

Years of research were spent in developing Pard . . . research backed by the extensive laboratory facilities of Swift & Company, world-famous purveyors of fine foods. Canine feeding tests have shown that Pard *prevents* the multitude of digestive and nutritional troubles that arise from hit-or-miss feeding.

Every ingredient in Pard is pure and wholesome, of the quality you yourself would select. Pard digests easily; keeps dogs in top condition; supports reproduction and lactation.

Your supply house has Pard—or write to Swift & Company, 4203 Packers Ave., Chicago.

PARD ***health food for dogs***

A Product of SWIFT & COMPANY

good effect of the supplementary provision of vitamin B_1, and observers both in this country and in the Near East had come to the conclusion that a large proportion of infant mortality associated with gastro-intestinal disturbance might be due to a deficiency of this fraction consequent on the relative poverty of the mother's milk and of cow's milk in this vitamin.—*The Veterinary Record*, 16:12.

* * * *

Dr. E. A. Buxton, Vinton, Ia., reports theft from his practice car, medicine case and other accoutrements, May 2.

"Dejem"

CANINE DISTEMPER COMPOUND

"Dejem" is decidedly beneficial to dogs with DISTEMPER. It also controls the severe sickness following inoculations.

"Dejem" 16 oz. size, 1 bot.....$ 2.75
3 bot. .....$6.75, 6 bot.....$12.00

Mangan & Co., Laboratories
294-298 E. 161st St. New York

HARLTON'S LIQUID BLISTER *and* FREE BOOKLET

Easy to apply. Saturate on with hand—no rubbing. Doesn't burn, set skin "on fire," kill hair, or scar. Head let down in few hours. No rest necessary in many cases. Vary application to produce just degree of counter-irritation needed. Diluted with oil, makes any strength liniment desired. FREE SAMPLE—a $1.00 bottle sent free postpaid upon request if you have never had one . . . . treats several cases. It doesn't pay to be without this convenient, effective and economical preparation; write for sample or mail order today. 4-oz. size, $1.00; 16-oz., $3.00.

Detroit Veterinary Supply Co.
460 West Jefferson Avenue, Detroit, Michigan
Canadian Branch, 139 Sandwich St., Windsor, Ontario

CROCKETT HOTEL

Comfortable rooms with sleep inspiring beds, private bath, ceiling fans, and circulating hot water. Splendid food in the Crockett Coffee Shop—moderately priced.

LARGE SPACIOUS ROOMS WITH BATH

FROM $1.50 A DAY

SAN ANTONIO
TEXAS

THE VETERINARY RECORD
Founded 1888

A WEEKLY JOURNAL FOR THE PROFESSION.

Published by the

NATIONAL VETERINARY MEDICAL ASSOCIATION
of Great Britain *and* Ireland

2 Verulam Bldgs., Grays Inn
LONDON W. C. 1.
ENGLAND

Subscription, £2.12.0 per annum.

Dr. Naylor's Medicated Teat Dilators

A safe and dependable treatment for Spider Teats, Scab Teats, Cut and Bruised Teats, Obstructions and for keeping teat canal open after operating.
Dr. Naylor Dilators fit either large or small teats without overstretching or tearing, are easy to insert and stay IN the teat. They carry antiseptics and healing agents into teat canal to combat infection and promote healing. The dilators themselves are Sterilized, Soft, Absorbent dressings which protect the inflamed area, absorb inflammatory exudates and keep teat canal open in its natural shape while tissues heal.

Price to Veterinarians

Dollar Package (contains 48 Dilators).....$8.00 Per Doz.
Fifty Cent Package (contains 18 Dilators)..... 4.00 Per Doz.
←Plain Dispensing Package (contains 15 Dilators)..... 3.00 Per Doz.

H. W. NAYLOR CO. MORRIS, N. Y.

ADMITS HE IS GOOD

W. P. Kean, a non-graduate veterinary practitioner of Elkton, South Dakota, recently used considerable advertising space to tell his fellow citizens how good he is and what they require in a practical veterinarian for the safety of their investment in live stock, citing his experience with all manner of hard cases during the past 40 years. The needs of the South Dakotans, it seems, are summed up ungrammatically as follows:

"Now, gentlemen, get a man who knows what the trouble is and what to do. It don't make any difference what school a man is from, what his creed, color or nationality is, get a man that can hit these animals in the neck and take a bucket of blood from them in two minutes or purge them properly."

Dr. G. A. Handley, Eaton, Ohio, sends the following treatment relied upon by a woman "fistula specialist" in his community to cure fistula and poll-evil:

Jerusalem the Hebrew town, thou who the Lord Jesus Christ have crucified and out of whom flow water and blood, and that is for beast and vermin good.

The treatment consists in writing out the above on a scrap of paper and fastening it in the mane.

Complete Official Proceedings of the

Twelfth International Veterinary Congress

Are Now Ready

Published in 3 Volumes (1,500 pages) dealing with new developments in:

Relationship of Veterinary Science, Animal Breeding, and Public Health.
Meat and Milk Hygiene.
Research on Filtrable Viruses.
Infectious Abortion (Bang's Disease).
Tuberculosis Eradication and Prevention.
Foot-and-Mouth Disease.
Hog-Cholera Prevention and Control.
Gas Edema Diseases.
Paratyphoid Diseases.
Equine Encephalomyelitis.
Diseases of Young Animals.
Progress in Veterinary Surgery.
Parasitic Diseases.
Poultry Diseases.
Animal Breeding and Dietetics.
Deficiency Diseases.
Infectious Anemia (Swamp Fever).

and others.

The volumes also include: List of more than 3,000 members, radio addresses, resolutions, and descriptions of clinic and special features.

$5.00 postpaid

H. PRESTON HOSKINS, GENERAL SECRETARY, 221 N. LA SALLE STREET
CHICAGO, ILL.

Classified Advertisements

For Sale, Wanted, etc., $2.00 for 25 words or less; additional words, 8 cents. 25 cents extra when replies are sent in care of VETERINARY MEDICINE.

NOW READY—2nd edition Judy's Dog Encyclopedia, 464 pages; $5.00 cash or C. O. D. Dog World subscriptions, $2.00 one year; $3.00 two years. JUDY PUBLISHING COMPANY, 3323 Michigan Blvd., Chicago.

WANTED: Position as assistant for small animal hospital. Will go anywhere. Married; 34 years of age; reliable; steady. Address No. 141, care of VETERINARY MEDICINE.

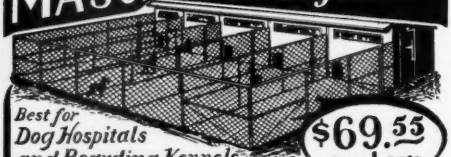
FOR SALE or lease, Small Animal Hospital with established practice, in southern Illinois. A real opportunity. Address No 143, care of VETERINARY MEDICINE.

FOR SALE: A mixed practice in the heart of the Imperial Valley, Calif. Large territory; good roads and plenty to do. Write for particulars. Address Dr. G. P. McNay, 442 S. 4th St., El Centro, Calif.

WANTED: A competent, ambitious, reliable veterinarian to locate in Jersey County, Illinois. It offers an exceedingly fine opportunity to the right man. There is nothing to buy. For further information, address: P. W. Chapman, Jr., 805 S. First St., Champaign, Ill.

JUST OUT: New, second edition of Udall's Practice of Veterinary Medicine. $5.00, prepaid. Veterinary Magazine Corp., 75 E. Wacker Drive, Chicago, Ill.

MASON'S *Kennel Fences*



Best for Dog Hospitals and Boarding Kennels

$69.55 and up

Mason's are Real Kennel Fences—Strong, Good Looking and sold under a Money Back Guarantee to hold the largest and strongest dogs. Used and approved by best Kennels everywhere.

SEND FOR FREE CATALOG

Describing Permanent and Movable Dog Fences, Kennel Stalls, and Gates at Low Direct Factory Prices.

MASON KENNEL FENCE CO., Box 77, Leesburg, Ohio

Eighteen veterinarians and their wives, from nine counties, attended the dinner meeting of the Southeastern Iowa Veterinary Medical Society at Mt. Pleasant, April 14th. The spring problems of veterinary practitioners were discussed by J. v. H. Schantz, E. A. Horner, C. E. Hunt, H. E. Tyner, H. G. Dow, C. W. Wiley, S. P. Holtz, H. A. Johnston and Grant B. Munger. The officers elected for the ensuing year were: C. E. Hunt, Mt. Pleasant, president; J. v. H. Schantz, Fairfield, vice-president; and T. J. McCabe, Mt. Pleasant, secretary-treasurer.

Periostine

Horse Back To Work in Three To Five Days

It is a powerful antidote to inflammation occurring in the periosteum, articulations, bursæ, tendons, ligaments; also where there is pain, exostosis or lameness. Usually only one application is necessary. One bottle is sufficient to treat three or more cases.

Endorsed by almost every veterinarian that has given it a trial.

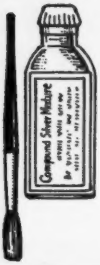
FREE Booklet—"Reminders in Diagnosing Obscure Lameness."

Price per bottle..$2.00
Three bottles 5.00

Free Sample. To Every Veterinarian that has not received a sample, we will gladly send postpaid a liberal sample upon request. No obligation.

DETROIT VETERINARY SUPPLY CO.
Detroit, Michigan
Canadian Branch, Windsor, Ontario

GUARANTEED TO GIVE SATISFACTION



M·A·C

ACCEPTED AND USED BY THE PROFESSION SINCE 1900

In the treatment of Splints, Spavins, Sidebones, Curbs, Inflamed Tendons, Bursal Lameness, etc.

"M. A. C. HAS NEVER BEEN SUCCESSFULLY IMITATED"

CARTER-LUFF CHEMICAL CO., HUDSON, N.Y.

PRICES	
SINGLE BOTTLE	$ 2.00
¼ DOZEN 1 BOTTLE FREE	5.00
½ DOZEN 2 BOTTLES FREE	8.00
1 DOZEN 4 BOTTLES FREE	15.00
2 DOZEN 4 BOTTLES FREE	25.00

FOR PRICES IN CANADA write to

Wingate Chemical Co.
Montreal

AGENTS SOUTHERN STATES
Kentucky Serum Co.
LOUISVILLE, KY.